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EDUCATIONAL REVIEW

EDITED BY WILLIAM McANDREW

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ABILITY GROUPING IN THEORY AND PRACTICE

By Professor EDWARD A. LINCOLN

HARVARD UNIVERSITY GRADUATE SCHOOL OF EDUCATION

DURING the past ten years a great deal of experimentation has been carried on with the form of class organization called ability or homogeneous grouping, and considerable material dealing with these experiments has been published. In a recent document reviewing the progress of educational research during the decade from 1918 to 1927 there are listed seventy-two articles, addresses, theses, monographs and books which treat of various aspects of this subject.[1] There has also appeared a fairly large number of magazine articles which were not included in this particular list, and it is probably safe to say that a complete bibliography on this topic at the present time would include at least from 150 to 175 titles. Although this is a small body of material when compared with that which is available concerning some other subjects, it is enough to provide an interested student with the basis for a fairly complete study of the aims, means, values, difficulties and dangers of the plan in its present status. It goes without saying, of course, that no final evaluation of ability grouping can yet be made. While a good deal of evidence is available, it is not yet all in, and the decision must be postponed for perhaps another decade.

It is hardly necessary in a meeting of this sort to pause long to develop the thesis that the need for ability grouping grows out of the fact of individual differences among pupils. Every teacher who has met a single class and every superintendent who has examined a single age-grade table knows this fact to be true. It may be well to note in passing, however, that some educators talk and write as if they believed that there was no problem of individual differences until the psychologists produced these differences and developed them by means of their accursed standard tests. These good people apparently think that if tests had not been invented all pupils would be alike, and many of our problems never would have arisen. Nothing, of course, could be further from the truth. Children were different long before standard tests were ever dreamed of, and it was the realization of the existence of individual differences, and of the necessity for perfecting instruments which would accurately measure these differences, that has been the underlying cause in the development of educational measurement.

[1] W. S. Monroe and others, "Ten Years of Educational Research, 1918–1927." University of Illinois Bulletin, Vol. XXV, No. 51, August 21, 1928.

It is no doubt also unnecessary to argue at length the proposition that the school should provide for the individual differences among its pupils. Very few educators or laymen in these days would contend that each child ought to be treated exactly like every other. The questions with which we are concerned are rather: How successful is this plan of ability grouping in helping to fit the school to the child? Is it the only way we can accomplish this object? If not perfected, does it hold out hopes for the future?

It appears from the data at hand that ability grouping is being practiced from kindergarten to university. This is in itself an important finding, since it indicates a wide-spread interest in the plan and means that we may soon expect a substantial amount of further evidence as to its success or failure. In the meantime, we have the results of several carefully planned and executed experiments in the field, supplemented by a large amount of observation and comment. What do they tell us?

Investigators have attempted to evaluate ability grouping in several ways. They have tried to get evidence from changes in marks, percentages of failure and promotion and the like. They have given standard tests to compare the achievements of pupils in homogeneous groups with those in the old style heterogeneous grades. Studies of time saving and money saving have been made. Finally great pains have been taken to get teacher judgments as to the merits and deficiencies of the plan as observed in actual operation.

One of the studies showing the reduction of failures was made by Torgerson, in West Allis, Wisconsin.[2] In the first six grades, which contained 2,500 pupils, he found a percentage of failures of 12.2 per cent. This was reduced to 7 per cent. after classification, a reduction of 42.7 per cent. Among 686 pupils in grades VII to IX inclusive, the failures were reduced from 16 per cent. before classification to 13 per cent. afterwards. This is a reduction of 18.7 per cent., and while not as striking as the figure for the lower grades, it is a saving which is decidedly worth while.

Another study was made by Layton in Detroit.[3] His eight-grade platoon school of 1,184 pupils was classified by the use of intelligence tests combined with teachers' judgments, and the decreases in the percentages of failures between February and June ranged as high as 20 per cent., and were over 12 per cent. in three of the half grades.

In the Washington High School at Duluth, Minnesota, A. M. Santee[4] studied the effect of grouping on failures from February, 1919, to February, 1923. The decrease was very striking in arithmetic; the failures dropped from 33 to 12 per cent.; in English there was a decrease from 31 to 15 per cent., and in history and geography the change was from 22 to 10 per cent. In addition to these gains, a number of superior pupils carried five courses instead of four, and a French class was able to do the work of two semesters in one.

Among the studies which deal with the success of ability grouping as shown by test results there is an interesting comparison made by Torgerson of the results on the Thorndike-McCall Reading Scale in West Allis where there is ability grouping and in other Wisconsin communities where there is not.[5] Among the twelve hundred West Allis pupils 7.2 per cent. are retarded

[2] T. L. Torgerson, "Is Classification by Mental Ages and Intelligence Quotients Worth While?" *Journal of Educational Research*, Vol. III, No. 2, March, 1926, p. 171.

[3] W. Layton, "The Reclassification of Pupils in One Elementary School." Bulletin of the Department of Elementary School Principals, Vol. II, No. 4, July, 1923, p. 239.

[4] "Results of Classification of Pupils Based on Ability as Shown by Intelligence Tests, Tests of Achievement and Teachers' Marks." Bulletin of the Department of Elementary School Principals, Vol. II, No. 4, July, 1923, p. 276.

[5] *Op. cit.*

more than one year according to the test standards; 82.8 per cent. may be rated as normal, and 10 per cent. are accelerated. In the communities using the regular type of organization, the corresponding figures are 23.9 per cent. retarded, 61.6 per cent. normal and 14.5 per cent. accelerated. The most striking contrast is in the case of the retarded pupils, where the West Allis schools show only about a third as many who are below the standards.

Another investigation is reported by J. T. Worlton,[6] of Salt Lake City. This study dealt only with those pupils in grades IV B to VII B inclusive whose intelligence quotients were 90 or more, but the indications for this group were clear. The average performances on four standard tests of the pupils in the homogeneous classes were appreciably higher than those of the pupils in heterogeneous classes in the city at large. This confirmed the findings of a previous study by the same investigator in which he reported that "Pupils in homogeneous classes make greater gains in knowledge of the subjects taught than do pupils taught in heterogeneous classes."

An interesting report of what can be done in the first grade is given by Grace Arthur.[7] A study of the reading ability at the end of the first year showed that while the children as a group were mentally just at the normal age when they entered school, their scores in the Haggerty Visual Vocabulary and the Haggerty Sigma I Reading test were, on the average, from 22 to practically 100 per cent. above Haggerty's standards.

It must be pointed out that there are also some studies which have found no gain in pupil achievement. Thus the work of Purdom, who made one of the most careful experiments yet reported, leads him to conclude that, "Pupils in homogeneous sections do not gain more than pupils in heterogeneous sections when the results are measured, by standard tests."[8] In Purdom's experiment, however, no attempt was made to instruct the teachers in different methods for handling the different groups, or to modify the course of study to fit the different levels of ability. This condition, together with the fact that the grouping was done on the basis of a single intelligence test, undoubtedly had much to do with the results.

Other important evidence as to the effect of grouping on attainment has been obtained by the study of pupils' accomplishment quotients in relation to their intelligence quotients. It has been demonstrated many times that there is in the ordinary school grade a low degree of relationship between these two quotients. That is, instead of finding that the superior children work up to the full measure of their abilities and that the children with low IQ's do not measure up to their apparent abilities, the reverse is true. Torgerson shows that after grouping the relationship between ability and accomplishment is much higher.[9] Franzen had shown earlier that grouping in Garden City, New York, materially raised the correlation between AQ and IQ in every grade from the third through the eighth, and so this point seems to be fairly well established.[10]

Many investigators have attempted to evaluate the plan of ability grouping by getting the consensus of teacher opinion as

[6] "The Effect of Homogeneous Classification on the Scholastic Achievement of Bright Pupils," *Elementary School Journal*, January, 1928, pp. 336–45.

[7] "A Quantitative Study of the Results of Grouping First-Grade Classes According to Mental Age," *Journal of Educational Research*, Vol. XII, No. 3, October, 1925, p. 173.

[8] T. L. Purdom, "The Value of Homogeneous Grouping," University Research Monographs, No. 1. Warwick and York, Baltimore, 1929.

[9] *Op. cit.*

[10] R. H. Franzen, "The Conservation of Talent," from "Intelligence Tests and School Reorganization." L. M. Terman, Editor. World Book Co., Yonkers, N. Y., 1923, pp. 73–91.

to its advantages and disadvantages. Perhaps the most ambitious study of this sort is one reported by Corning, made after the plan had been in operation for several months in the Trinidad, Colorado, schools.[11] The teachers were asked to report the advantages and disadvantages they had observed, and to return their replies unsigned to the office on the day on which the inquiries were sent out. This was to insure so far as possible spontaneous replies which should not be influenced by a desire to please, or by reading up on the subject.

There were twenty-seven different advantages which were mentioned a total of two hundred and thirty-six times. Some of these are tremendously important. For instance, twenty teachers reported that it was easier to arouse interest and enthusiasm, and a like number pointed out that under the grouping plan no pupils were discouraged. Fifteen teachers discovered that discipline was easier, and fourteen noted laggards of former years had gained self-esteem, and had become leaders in their classes. As Corning points out, "If only one half or one fourth of these advantages really exist, the change would be justified."

There were, of course, some disadvantages noted. There were only ten of these, however, and they were only mentioned a total of eighteen times. Many of them, moreover, are things which can and will be remedied as techniques, methods and materials are better developed, and as teachers come to a better understanding of the whole matter. Four teachers, for example, found that some pupils were wrongly classified, one saw that the plan was unjust to the temporarily incapable and another found the text-books unsuitable for the lower divisions. These are difficulties which can be overcome, and are not inherent in the plan itself.

Other studies have produced results which are in agreement with the findings of Corning, and it is fair to conclude that teacher opinion is overwhelmingly in favor of the plan after it is given a fair trial.

Let us now turn our attention to the problem of getting the children into groups. Numerous methods have been tried as a basis for the grouping, and they range from the simple plan of using the results of a single test, usually in the form of the IQ, to a very elaborate plan which takes account of practically every phase of the pupil's development.

The experiments indicate very clearly that the first method is not sufficiently reliable. That is, when classification is based on the IQ or any other measure alone it is later found that many children are wrongly classified. On the other hand, it is possible that some of the plans are more elaborate than necessary and require an excessive amount of time and effort. Just what the ideal plan may be nobody knows, and the situation is very well summed up in the following quotation from Dickson:

> No rule can regulate the classification of a school according to the capacity of pupils to learn; no two schools can be treated exactly alike; the machinery must be subjected to constant adjustment. A rule might be stated: Find the mental ability of the pupil and place him where he belongs, taking careful consideration of his age, former accomplishment in school, health and any other condition which is known to have a bearing on his proper placement.[12]

With this statement as a reservation in the background, let us consider two of the many plans which have been used with a fair degree of success. The first plan is that set forth by Ryan and Crecilius in their book on ability grouping,[13] and is perhaps the most elaborate plan in use. The data used in the sectioning consist of health rating, rank in class, mental age,

[11] H. M. Corning, "After Testing—What?" Scott, Foresman, New York, 1926, p. 185 ff.

[12] V. E. Dickson, "Classification of School Children According to Mental Ability," from "Intelligence Tests and School Reorganization." World Book Co., Yonkers, N. Y., 1923, p. 35.

[13] H. H. Ryan and P. Crecilius, "Ability Grouping in the Junior High School." Harcourt, Brace and Co., New York, 1927.

intelligence quotient, chronological age, dental age, height age, weight age, social age estimated by the teachers, arithmetic age and reading ages in both speed and comprehension of reading. The gathering of all this material requires considerable work on the part of many people, including teachers, principals, doctors, dentists and nurses.

After the data are obtained they are put on cards, and individual profile graphs are drawn for all the children. With these cards the grouping is done. Since the school has an enrolment of more than 400, it is possible to make up a large number of groups, and this is done. There is the "A" group, made up of about a tenth of the pupils who are superior mentally and generally mature. They can do the three years' work of the school in two years. The "Top B" group is composed of the very intelligent pupils who are not quite mature enough for the "A" section. The regular "B" groups are composed of average children, and the "C" groups are made up of those below the average. There are two types of "C" groups. Those children in this group who are well advanced toward adolescence are segregated by sexes, while those who have not reached this state of maturity are put into mixed "C" sections.

In the actual process of grouping the cards are first arranged in order of IQ. The selection for the "A" group is made by taking all the cards showing an IQ of 115 or more, and then eliminating those cards which show too low a level in any one or more of the traits measured. These eliminated cards form the larger part of the "Top B" group. The "C" groups are made up from the cards showing IQ's below 100; the regular "B" groups are formed with the cards which show IQ's from 100 to 114, inclusive. Of course, hard and fast lines can not be and are not drawn, but the intelligence quotient is plainly the chief factor in this plan of grouping.

The second plan is one which is now being used in Reading, Massachusetts, and also deals with grouping in the junior high school.[14] A list of all the pupils is made showing educational age attained on the Stanford Achievement Test, mental age, IQ and average mark in the fifth grade. Two other columns are provided on the sheet, one headed "Work Habits," and the other "Remarks." In the first of these is entered the estimate of the child's teacher as to his habits of work in the fifth grade. These are clearly an important factor in the success of any pupil, and this information is especially valuable in deciding whether or not the pupil is likely to succeed in a fast-moving group. In the "Remarks" column are entered all sorts of facts which seem likely to have any bearing on the pupil's chances of success or failure. Health notes, personality traits, attendance records and the like are set down here.

In the process of grouping, the pupils are first put in sections according to educational age, and then readjustments are made by taking into account the other factors. This is done by entering on the list before each child's name the number 1, 2 or 3 for the preliminary section, and then placing in another column the final assignment. Thus the most important factor in this plan is seen to be the educational attainment of the pupil. The educational age is used because it shows what the pupil has been able to achieve in spite of all handicaps, such as change of school, illness or slow mental development. It tells his educational status, which is the point from which he must go on, and is an indication of what he will accomplish in the future.

[14] This plan is largely the result of the work of Miss Verna L. Wadleigh.

If there are any general principles which can be laid down as a summary of the various plans in operation they would seem to be as follows:

(1) No single measure is sufficiently reliable to be used alone as a basis of grouping.

(2) The most important thing to know about the child is the level of educational achievement that he has reached. This is most reliably determined by the use of a battery of achievement or subject-matter tests.

(3) Intelligence test results are a valuable and almost indispensable supplement to the educational tests, because the mental age shows the level of achievement which the pupil may be expected to attain, and the IQ gives some indication of how fast he is able to go, and, by the principle of the constancy of intelligence quotients, what his final mental level is likely to be.

(4) The teacher's judgment is important because, to some extent at least, it gives information as to personal qualities which are not measured by tests, but which are nevertheless very potent factors making for success or failure in school work.

(5) Any item of information which has a bearing on the proper placement of the pupil should be given due consideration.

(6) There is apparently no way of assigning pupils automatically. Thus in the last analysis the grouping is made on the basis of judgment.

(7) Because of the unreliability of tests and teachers' judgments it is never possible to group with absolute accuracy. This means that any good plan must be a flexible one, and must provide for the reassignment of a pupil whenever it is clear that a mistake has been made.

If these principles are held in mind it is my opinion that any principal or superintendent can devise a plan of ability grouping which has a fair chance of success. However, there are difficulties and dangers which can not be overlooked or minimized.

Perhaps the greatest difficulty is to be found in the inertia of townspeople, school boards and teachers which usually opposes any new educational procedure. This difficulty must be overcome before any plan of ability grouping can be put into operation, and here lies a task for the constructive leadership of the superintendent, aided by the progressive teachers and supervisors of his staff.

Another difficulty is one which has been already intimated in the discussion of the methods of assigning pupils to groups. That is, there is great difficulty in finding an entirely satisfactory plan by which to classify the pupils. As stated above, no one has yet devised the perfect technique. However, this is a common failing of all types of educational endeavor. No one has discovered a perfect method of selecting teachers or building schoolhouses or teaching arithmetic or managing janitors or rewarding superintendents for their labors. If we insisted that no educational activities should be carried on until they could be done perfectly, we should be forced to close all our educational institutions from nursery schools up through the universities.

Probably the great danger in ability grouping is that the form may become substituted for the spirit. There is always the tendency to feel that, once the machinery is set up, the benefits will follow automatically, much as finished products drop off the moving belts in modern factories. Nothing could be further from the truth. There is experimental evidence and expert testimony to show that mere grouping alone is not likely to be productive of desirable results. If ability grouping is to bear fruit, it must be organized and administered by a group of workers who thoroughly understand the underlying philosophy of the scheme of organization,

who are well trained in the techniques of making up the groups, who are informed as to the different methods and materials necessary for the proper teaching of the various groups and skilled in the use of these methods and materials, and who, if not already convinced of the wisdom and practicability of the plan, are at least willing to enter whole-heartedly and open-mindedly into an experiment.

As a final question we may ask, is ability grouping a final form of organization, through which we can attain the ideal education for each individual child? The answer to this is undoubtedly, No. There are still wide differences among the pupils in any section, as a number of writers have pointed out, and many, if not most, of these pupils need more individual work and attention than the plan of ability grouping offers. Probably, then, the plan is chiefly valuable as a transition between the old method of grouping and the new school in which the individual child truly becomes the center of educational effort and activity.

CIVILIZATION AND THE INDUSTRIAL MUSEUM

By ALBERT PARSONS SACHS

EDITOR, "THE CHEMIST"; SCIENCE EDITOR, NEW YORK "WORLD"; CONSULTANT CHEMICAL ENGINEER

BACON, the greatest speculative philosopher and scientist of the British genius, wrote only one imaginative work—the "New Atlantis"—in which he shows us the university of his Utopia with its great museum of the products of man's craftsmanship.

Bacon's intuition was subtle. He understood that mankind could most grandly be advanced through the cultivation of the useful arts, of invention, of applied science. To this end he devoted his great philosophical and scientific works. And he could conceive of nothing quite so conducive to this vast and noble aim as the industrial museum.

We of a later age, we the successors of the accumulated knowledge of the three centuries between Bacon the precursor and Ford, Edison, Marconi and Wright the fulfillers, are in a position even better to appreciate the grandeur of Bacon's conception.

Mankind must adjust itself to its environment, though it may be unconsciously at the same time altering its environment. To teach our youth to-day the intricacies of Latin, the subtleties of scholastic philosophy and the graces of swordsmanship and horsemanship would be a futile gesture unsuited to the spirit of the times. It is just as futile as teaching lion-hunting to Eskimos or seamanship to the Arabs of the Sahara.

What our youth needs is not Latin, but English; not scholastic philosophy, but the modern scientific spirit; not horsemanship, but automobile driving; not swordsmanship, but modern business methods. This is without prejudice to those scholars, those antiquaries, those specialists whose researches add to the grace of life, but they are the luxuries of our civilization and not the vast majority who must face a life of labor, of production and exchange of worldly goods.

Each civilization must teach its members how to live and thrive in that civilization. What would have happened to ancient Athens if it had taught its youth only how the Hyperboreans were able to thrive? What will happen to our civilization if we teach our youth the knowledge that would have been useful only to a knight in King Arthur's court or to a scholar of a medieval university?

That which concerns us in our daily life should be the daily concern of those who

live that life. We must teach this generation and the generation which is now growing up to speak our language and their language and to live our life and their life easily, sanely and happily. We must teach them to understand the automobile and aeroplane as naturally as the youth of two centuries ago understood the horse and coach. We must teach them to understand the telephone and radio as those of a half dozen generations ago understood printing. We must teach them to understand this age of mechanical progress as naturally as their ancestors understood the achievements of their own age.

The invention of the wheel by some primitive, nameless ancestor was undoubtedly more revolutionary than the invention of the automobile, but think how the wheel has become so a part of human life that it has lost its wonder. The wheel is perhaps the greatest achievement of mankind because nature herself does not use it, does not present the model. Wheels of engines thundering along steel rails, wheels of automobiles humming over the concrete roads, propeller wheels or screws churning through all the seas and propeller wheels whirring through the skies. And no man gravely wonders! We have made it part of our every-day lives.

As our inventions multiply no one can hope to keep abreast of them by mere accidental observation. Even the Spartans understood that. To make their men expert in the profession of arms they taught their youth diligently and not merely from books. We must devote ourselves to understanding our age and our weapons of existence. We must teach the young the world they live in. Our schools can do it. Our universities can continue the process. Books can help, but book-knowledge is not enough.

We see dimly at present the stately march of invention, the evolution of our progress. How can we best display this to eager youth and wistful adult and make it an integral part of their lives? Through the medium of the printed page? Through the moving picture? Yes, both these means are valuable but neither alone nor together are they nearly so valuable as the examination of models, actual working models, the seeing of how things work and why they do what they are intended to do.

What can be so instructive as a series of models to show, let us say, the advances of the art of transportation? What the first advance was we can not tell. Perhaps a section of tree trunk rounded to make a primitive wheel or roller. What can be more instructive than full-size models of an ancient ox-cart, a medieval coach and a modern roller-bearing rubber-tired wagon of equal weight which the visitor might push at will to see how much difference in effort really is required to move the three, and the saving in power resulting from the use of our present vehicles? Models of steam locomotives of a primitive type and the more modern engines, perhaps on a reduced scale so that their workings might be more easily observed, would render such an exhibit more complete.

Models, actual working models, of the various types of aeroplanes and lighter-than-air machines, which could be driven in a wind tunnel at the will of the student to show their respective stabilities in winds of various velocities, and their lifting power, would further extend the understanding of the observer.

Models of ships from the hollowed trunk of a tree and the crudest raft to our latest ocean liners and submarines would show the orderly course of development in sea transport. Tanks in which the water resistance and stability of various designs of hull could be shown and where the models could be operated at will by the observer would add to the picture of the scene. A submarine model, in glass perhaps, or with glass sections, or of non-inflammable transparent plastics, which could be made to submerge or emerge at the will of the ob-

server, would still further round out common knowledge. These would teach as nothing else could teach. These would stir the imagination as no printed word or flat picture ever could. Transportation would be studied, not as a chapter in a text-book which the student would temporarily memorize in order to pass some examination, but as the living, vital thing.

Models of pumps, models of aqueducts, models of elevators, models of subways, models of mines and quarries, models of oil-wells, models of the solar system, models of the atoms, models of machinery and machine tools, models of measuring and testing instruments—all offer the same opportunities. Working models of our civilization they would be, a civilization in which we live, to which we must adapt ourselves if we wish to be happy and which we will ultimately improve if we understand it. Working models for the inquisitive hand to operate and the inquiring mind to understand are the essence of such a knowledge.

This is the ideal of the industrial museum, beginnings of which, more or less satisfactory, exist in various cities of the world. None is complete, nor should it ever be so. It will always be growing, always adding to its text, always changing its emphasis as the times change. The beginnings have been made but the present status is pitifully inadequate.

The Museums of the Peaceful Arts in New York represent a brave beginning, a mere beginning but a far-visioned one, of such a comprehensive plan. Fine museums of this kind exist already, the Deutsches Museum of Munich, the Science Museum of London, the Technisches Museum of Vienna and the Conservatoire National des Arts et Metiers of Paris. Each has splendid features of its own, particularly the Deutsches Museum which is visited by scientists and technologists from all the world and by the children and adults of Munich and much of Germany. In several American cities there are beginnings of such museums and in some comprehensive plans are being worked out.

If the Museums of the Peaceful Arts in New York are adequately developed, it will become the great schoolhouse of the day; there children will be brought by their teachers to see, for instance, a scale model of the solar system with the earth and the planets and the moon performing in fifteen vivid minutes the exact replica of the year's motions in the heavens. In these fifteen minutes, guided by a skilful teacher, these children will know more about descriptive astronomy than they might learn in weary weeks of reading texts which tell the truth accurately enough but are unable to show the truth. The rising and setting sun, the course of the stars, the phases of the moon become simple matters from such a demonstration; text-books can never produce such an understanding in human minds.

By the use of such a museum the minor boredom of the class in elementary physics inadequately backed by the physical facilities available to each separate teacher will be replaced by the vivid representation of the facts on a generous scale. Abstract talk about principles and discussion of laws will be replaced by simple engineering application of those principles in devices in common use. The affairs of daily life will be linked with science and engineering in a suitable harmony.

When the world understands fully the value of such museums we may expect a mad rush of millionaires to endow them adequately, just as they are still endowing orphanages, overgrown universities and other institutions which once represented the world's great immediate need, but now can shift for themselves. The founders of great industrial museums will rank in future cultural history as the founders of great universities rank in present history. And the heads of such institutions will be as mighty in the land as university presidents occasionally now are.

EDUCATIONAL EVENTS

THE TEACHING OF GERMAN IN ENGLISH SCHOOLS

THE need of greater attention by schools and pupils to the teaching and study of German, in order that a knowledge of the language may correspond more adequately with the numerical and commercial importance of the German-speaking peoples on the continent, is emphasized in a report just issued by the British Board of Education, which is summarized in the London *Times*.

The board states that it has conducted within the last few months inquiries from 1,195 grant-earning secondary schools in England. It has found that German, when included in the curriculum at all, is the second foreign language studied, though there is scarcely one in which pupils above the preparatory department are not required to pursue a four or five years' course of French in the main part of the school. There is no secondary school in receipt of grants in which German is the sole foreign language studied.

A similar inquiry as regards Latin a year ago showed that in 1,177 schools there were 131,107 pupils studying Latin; and in the 1,195 schools covered by the recent inquiry there were 18,430 pupils studying German. In the school certificate examinations in July, 1928, the number of candidates offering French, Latin, German and Spanish were: French, 54,273; Latin, 23,558; German, 3,837; Spanish, 719. In the Lancashire and Yorkshire area 65 schools out of a total of 275 included German in the main part of the school. Though the war checked the study of German in secondary schools, the neglect of German, adds the report, is much older than the war. In their memorandum in 1912 on the teaching of modern languages in secondary schools (Circular 797), the board had occasion to deplore the decay in the study of German.

Quoting from "Modern Languages Instruction in Canada," the report gives the following figures of population to illustrate the relative importance of the study of languages:

	Total Estimated World Population speaking	In Europe
French	46,000,000	42,000,000
Italian	40,500,000	37,000,000
Spanish	70,886,000	18,000,000
German	75,000,000	71,000,000

The report suggests that the fact that 14 times as many candidates offered French as German in the school certificate examinations indicates a view of the relative importance of the two languages which hardly corresponds with the facts.

THE PUBLIC SCHOOLS OF HAWAII

A SPECIAL correspondent of the New York *Times* writes from Honolulu that with 70,000 children entering the public schools of Hawaii at the beginning of the academic year, plans have been announced by Governor Lawrence M. Judd for a threefold educational survey to be undertaken in the territory if it meets the approval of the general public and the next legislature.

The proposed inquiry would cover the schools themselves, the industries of this group of islands and a coordination of schools and industries. A check would be made of the general curriculum, including subject-matter and teaching technique, the grading system in vogue relating to student classification and retardation, the teacher-training program at the territorial normal school and vocational education.

"Industry in Hawaii is inseparably tied up with the results of education," the governor commented in announcing his survey plan. "In order to know what type of training or how much should be offered in the schools from a vocational standpoint it is necessary, first, to know what opportunities in industry are available throughout the territory. It is therefore absolutely essential that the schools and industry be coordinated."

The school problem in the islands has been a question for an increasing amount of discussion during recent years. The question which must be solved is what to do with school graduates, who are preparing themselves, at the expense of the taxpayers, for "white collar" jobs which do not exist.

About 45 per cent. of the money raised by taxes on property goes to the upkeep of the educational institution.

This year is remarkable in the school history of Hawaii since for the first time all pupils are housed in government-owned buildings. In the past, officials of the department of public instruction have been forced to rent from Japanese language schools classrooms which have

been utilized to care for the overflow. At times as many as seventy-five such rooms have been contracted for and filled during the school year.

The school-building program has been pushed with such rapidity that for the first time there has been no genuine overcrowding. An added factor in the housing situation is that the pupil increase this year was only 3,000, or 5 per cent.

THE ADLER PLANETARIUM AND ASTRONOMICAL MUSEUM

IT is noted in *Science* that an instrument has been devised under the incentive of Dr. Oskar von Miller, director of the German Museum in Munich, and with the cooperation of the Carl Zeiss Works in Jena, which portrays the heavens and all the phenomena which arise from the motions of the celestial bodies. This instrument, known as a planetarium, is largely the creation of Dr. Bauersfeld, of Jena. It projects the stars of the heavens upon the interior surface of a great dome. The bodies of the solar system have separate, individual projectors and by means of suitable mechanism all the motions of the heavens are reproduced—of course, in general, greatly accelerated.

The first of these instruments was completed in 1924. At the present time there are fifteen in Germany, one in Austria, two in Italy and one in Russia. It is the unanimous testimony of all who have visited these planetaria that in them has been achieved a means of instruction and entertainment of superlative merit. Dr. Strömgren, of Copenhagen, writes, "Never before has a means of entertainment been provided which is so instructive as this, never one which is so fascinating, never one which has such general appeal. It is a school, a theater, a cinema in one; a schoolroom under the vault of heaven, a drama with the celestial bodies as actors."

Mr. Max Adler, of Chicago, has presented to that city the first of these instruments to come to America. Under his gift of $500,000 there is being erected on the lake shore, near the Field Museum and the Shedd Aquarium, a beautiful building to house this instrument and an astronomical museum. The building is 160 feet in diameter, dodecagonal in form, with a central circular hall seventy feet in diameter, above which is the dome. This central hall is the planetarium room: the broad corridors about it house the museum features, research instruments, offices, lecture room and library. So far as possible, the exhibits in the museum will be in action so that the actual phenomena or method of operation can be clearly seen. A considerable number of exhibits have already been collected. The building will be finished and ready for opening to the public on the first of January, 1930.

Professor Philip Fox, for the past twenty years director of the Dearborn Observatory, has been appointed director of the Adler Planetarium. He sailed for Europe on the twenty-seventh of July to inspect various continental museums and the German planetaria, especially those in Munich and Jena.

PROGRAM OF THE CHILD STUDY ASSOCIATION OF AMERICA

A PROGRAM for the current year announcing the activities of the Child Study Association of America including the lecture courses, conferences, monthly calendars, study groups in New York and affiliated groups throughout the world is now ready for distribution.

Since 1888 the Child Study Association has been engaged in parent education. The movement then begun has, in its forty-one years of continued growth, spread far beyond its original confines. Because the association has always placed its emphasis upon continuous education for parents, it has consistently concentrated upon the initial purpose—to make available to parents the best current thought and reliable knowledge which the sciences have increasingly contributed on child development. This is carried on through several distinct though related channels: (1) Study groups, (2) training of leaders for work in parent education, (3) publication and distribution of printed and mimeographed matter, (4) arrangement of lecture and conference programs to which experts and professionals in child development and related fields contribute, (5) consultation service maintained in conjunction with the study group work, (6) cooperation with a large number and variety of other organizations whose work is in some way related to its own, (7) promotion and supervision of summer play schools which provide all-day care for city children during the

summer and continued education of many of the parents of these children throughout the year.

There will be three regional conferences on parent education in Greater New York in the month of October, under the auspices of the association. A departure has been made from the usual policy of having an annual conference in Manhattan only, in order to make the program more readily available to interested people in the Bronx and in Brooklyn.

The Bronx conference will be held on Wednesday, October 16, at the Concourse Plaza; the Brooklyn on Tuesday, October 22, at Leverich Towers, Clark and Willow Streets, and the Manhattan on Tuesday, October 29, at the Hotel Pennsylvania. These three conferences will take up the Parent Education Movement, the Mental Hygiene of Family Relationships, Health and Physical Development, The Child Study Association and the Parent Education Movement and Research in Child Development.

At the Bronx conference the speakers will be Mrs. Howard S. Gans, Mr. Morse A. Cartwright, Mrs. Cécile Pilpel, Mrs. Sidonie M. Gruenberg, the Honorable Jeanette Brill, Miss Jeanette Regensburg, Dr. George K. Pratt and Dr. James S. Plant; at the Brooklyn conference, Dr. Philip Moen Stimson, Dr. LeRoy A. Wilkes, Rev. John Howland Lathrop, Dr. Ruth Andrus, Mrs. Cécile Pilpel, Mrs. Sidonie M. Gruenberg, Mrs. Howard S. Gans, Dr. Helen Montague, Dr. Leonard Blumgart and Dr. Henry Neumann, and at the Manhattan conference, Mrs. Howard S. Gans, Dr. William E. Blatz, Dr. John E. Anderson, Dr. Lydia J. Roberts, Dr. Goodwin B. Watson, Mr. E. C. Lindeman, Mrs. Cécile Pilpel, Mrs. Sidonie M. Gruenberg, Dr. Frankwood E. Williams, Dr. Marion E. Kenworthy, Dr. C. M. Hincks and Dr. Lawson G. Lowrey. A complete program may be obtained from the Child Study Association of America, 54 West 74th Street, New York City.

CONFERENCE ON CHILD HEALTH

THE entire program of the White House Conference on Child Health and Protection, as reported in the *U. S. Daily*, has been put in motion with the acceptance of the chairmanship of the growth and development committee by Dr. Kenneth D. Blackfan, of Boston. Dr. H. E. Barnard is director of the conference. The personnel of the conference, which has been given to the *U. S. Daily*, is as follows:

Executive Committee: The Secretary of the Interior, Dr. Ray Lyman Wilbur, *chairman;* Dr. H. E. Barnard, Washington, D. C., director; the Chief of the Children's Bureau, Grace Abbott, secretary; Edgar Rickard, New York City, treasurer; the Surgeon-General, Hugh S. Cumming, the administrative assistant to the president; French Strother, Henry Breckinridge, New York City; Mrs. Louis H. Burlingham, St. Louis, Mo.; Bailey B. Burritt, New York City; Frederick P. Cabot, Boston, Mass.; Frank Cody, Detroit, Mich.; Dr. S. J. Crumbine, New York City; William Green, Washington, D. C.; Dr. Samuel McC. Hamill, Philadelphia; the Secretary of Labor, James J. Davis; Dr. William F. King, Indianapolis, Ind.; Gertrude B. Lane, New York City; Julia Lathrop, Rockford, Ill.; Mrs. William Brown Meloney, New York City; Mrs. Bina West Miller, Port Huron, Mich.; Mrs. Elizabeth A. Perkins, Ann Arbor, Mich.; Mrs. Raymond Robins, Brooksville, Fla.; Mrs. F. Louis Slade, New York City; Dr. William F. Snow, New York City; Dr. Louise Stanley, Washington, D. C.; Senator James Couzens, of Michigan.

Section 1, growth and development—Dr. Kenneth D. Blackfan, Boston, Mass., *chairman.*

Section 2, medical service and public health administration—The Surgeon-General, Hugh S. Cumming, *chairman;* (A) public health organization, Dr. E. L. Bishop, Nashville, Tenn.; (B) communicable disease control, Dr. George H. Bigelow, Boston, Mass.; (C) milk production and control, H. A. Whittaker, Minneapolis, Minn.; (D) prenatal and maternal care, Dr. Fred L. Adair, Minneapolis, Minn.; (E) medical service for children, Dr. Philip van Ingen, New York City.

Section 3, education and training—Dr. F. J. Kelly, Moscow, Idaho, *chairman;* (A) family and parent education, Dr. Louise Stanley, Washington, D. C.; (B) the preschool child, Dr. Samuel McC. Hamill, Philadelphia; (C) the school child, Dr. Thomas D. Wood, New York City; (D) vocational guidance and child labor, Anne S. Davis, Chicago; (E) recreation and physical education, Henry Breckinridge, New York City; (F) special classes, Dr. Charles S. Berry, Ann Arbor, Mich.

Section 4, prevention, maintenance and protection of handicapped children—C. C. Carstens, New York City, *chairman;* (A) state and local organizations, Mrs. Kate Burr Johnson, Raleigh, N. C.; (B) the physically and mentally handicapped, Wil-

liam J. Ellis, Trenton, N. J.; (C) socially handicapped—dependency, Homer Folks, New York City; (D) socially handicapped—delinquency, Frederick P. Cabot, Boston, Mass.

COOPERATION BETWEEN THE UNIVERSITY OF CHICAGO AND THE BOARDS OF EDUCATION AND HEALTH

THE reading habits of Chicago's school children will be subjected to a large-scale analysis under a new cooperative arrangement between the University of Chicago and the Board of Education, in an effort to improve the quality, scope and methods of reading by the children.

Superintendent William J. Bogan has completed plans by which one or more teachers from each elementary school in the city will enroll in a course of lectures on the modern teaching of reading being offered by Dean William S. Gray, of the university's school of education. The lectures and discussions will take place for two hours every other Saturday during the autumn and winter at Fullerton Hall, the Art Institute, under the auspiecs of the University College downtown. Inasmuch as principals, supervisors and superintendents will be invited to participate in the work, it is expected that the enrolment will reach more than 500.

Dean Gray will describe the results of the latest scientific studies of reading habits. Teachers will be asked to submit lists of the reading problems and defects encountered in their respective schools, and from the several thousand expected replies a systematic therapy will be worked out to correct whatever the chief reading defects of Chicago's children may be. Each participant will report the results of each session at teachers' meetings in the respective schools. The Dixon School, which was recently opened as a demonstration school for ideal reading methods, will be used as a laboratory, the entire faculty participating in the course.

During the autumn quarter the sessions will be devoted to a survey of modern tendencies in the teaching and supervision of reading. During the winter the delegates will be divided into groups to work out solutions of problems as suggestions for studies arise. University credit will be given to those seeking it. The first session will be held on October 5.

Professor Gray says:

An effort will be made to show how the content material may be enriched and widened and the technique of the reading improved. The old page-by-page assignment theory has been replaced by the belief that reading should be organized around larger problems and trends, to be covered over a period of a week or more. Brighter students must be encouraged to pursue independent reading, and given opportunity and guidance.

One of the most dominant errors in child reading is the tendency to read words rather than ideas, to be satisfied when the vocal sound of the individual words has been recognized. That can be corrected. Also, if there is to be any wide extension of the new movement for adult education, habits of independent reading must be encouraged in childhood. It is significant that the Chicago Board of Education is interested in stimulating interest in reading and reading methods.

In another cooperative enterprise between the university and the Board of Education, a group of teachers have been enrolled in a course on school hygiene being offered by Dr. Howard J. Shaughnessy, of the university's department of bacteriology and hygiene. The Chicago Board of Health is also cooperating in this enterprise. Health education, sanitation, exercise, nutrition, mental hygiene, accident prevention and the administration of school health departments will be among the subjects covered. Dr. Shaughnessy has recently completed a series of investigations of school ventilation.

THE INSTITUTE OF HUMAN RELATIONS OF YALE UNIVERSITY

AN additional gift of $500,000 to the Rockefeller Foundation's $1,500,000 donation in creating the Institute of Human Relations at Yale University was announced on September 29 by President James Rowland Angell. The gift is from the General Education Board of New York City. The total amount of $2,000,000 will be expended on the erection of a building for the institute, additional funds being available for carrying on its work.

Ground for the building was broken on October 1. It will be unique among the world's educational plants. It will contain a residential unit for the study of child development, a residential and treatment unit for the study of mental efficiency and mental diseases, modern lab-

oratories for psychological investigations and other quarters adapted to research in social psychology, economics and government.

The entrance to the new institute is to be impressive. Where Broad Street, Oak Street and Davenport Avenue converge there is to be a traffic circle 150 feet in diameter. Broad Street is to be closed as far as Oak Street and a sunken garden created between the new institute and the Sterling Hall of Medicine. Thus, on approaching a human welfare group of buildings there will be a perspective of the sunken gardens, flanked by the institute and Sterling wings, and giving a view of the Raleigh Fitkin Memorial Pavilion.

The section of the institute devoted to child welfare is to have an entrance on Oak Street and will be built to resemble as much as possible a private dwelling. On the ground floor a large nursery will be built with a concealed observation room for staff members and parents. On this floor also there will be a wading pool, an outside garden and reception room. A large photographic laboratory, where still and motion pictures of children under observation will be developed, will be on the floor above. This branch of the institute also will contain mothers' rest rooms, seminary offices and a large play room.

Various types of rooms to measure the stimuli and reactions of the human brain will be built in the section devoted to psychology. There will be shops, optical rooms, soundproof rooms, dark rooms, projecting rooms and laboratories containing the most modern equipment. In this section of the building will be a lounge and grill.

Another section of the building will be devoted to the department of mental hygiene and psychiatry. It will contain every comfort for persons under observation. Therapy will, of course, be included in the activities there, but it will not be the primary purpose of this division of the institute.

The primary objective of the division will be to study the natural history of mental diseases, to determine their origin and to study mental efficiency as well. Therefore the individuals selected for observation here will be not only the mentally abnormal but others who are normal; some with higher types of mentality than the average, and some with lower.

This section will contain about forty private rooms, several small wards, eight sitting rooms, rooms for doctors and nurses, a gymnasium and quarters for hydrotherapy and occupational therapy. Rooms will open on balconies and a terrace in a court.

The architect of this building in the human-relation group is Grosvenor Atterbury, of New York. Its construction will leave four units still to be obtained for the group, the isolation pavilion, the surgical pavilion, the women's pavilion and the semi-private pavilion extension. It is hoped to have the new building completed in time for the opening of the next academic year.

EDUCATIONAL NOTES AND NEWS

DR. ALEXANDER RUTHVEN, professor of zoology and dean of administration in the University of Michigan, has been made acting president.

CELEBRATIONS in honor of the installation of Dr. Clarence A. Barbour as tenth president of Brown University will extend over three days, beginning on October 16. The honors day address will be given on October 18 by Dr. Frank P. Day, president of Union College. President Ellen F. Pendleton, of Wellesley College, will give the address to the undergraduates.

DR. WILLIAM E. WICKENDEN has assumed his work as president of the Case School of Applied Science. Fitting ceremonies commemorating the founding of the college in 1880 will be held some time during the year, possibly in conjunction with the installation of Dr. Wickenden as third president of the college within the fifty-year period.

DR. FRANKLIN W. JOHNSON took up his new work as president of Colby College on September 19 at the beginning of the 108th year of the college.

DR. KATHARINE BLUNT, who was recently elected president of the Connecticut College for Women, opened the fifteenth session of the college on September 25 with an address at the first assembly of the year.

HONORARY doctorates of science were conferred on the occasion of the dedication of the new chemical laboratory of Princeton University of Berlin; Sir James Colquhoun Irvine, president of the American Chemical Society, in charge of research for the General Electric Company at Schenectady; Dr. Max Bodenstein, professor of physical chemistry at the University of Berlin; Sir James Colquhoun Irvine, chancellor of the University of St. Andrew's; Frederick George Donnan, professor of chemistry at University College, London, and Jean Baptiste Perrin, Nobel prize laureate and director of the laboratory of physical chemistry at the University of Paris. M. Perrin was unable to be present, and his son and collaborator, Francis Perrin, received the investiture in his place.

THE President of the French Republic has conferred upon Dr. C. C. Williamson, director of libraries and director of the school of library service of Columbia University, the decoration of chevalier of the Légion d'honneur in recognition of his successful efforts to organize American support for the rapid completion of the printed catalogue of the Bibliothèque Nationale.

SIR ROBERT ALEXANDER FALCONER, president of the University of Toronto, will visit Harvard University as Ingersoll lecturer in the spring of 1930. The appointment of four visiting lecturers is also announced. Arthur A. Blanchard, associate professor of inorganic chemistry at the Massachusetts Institute of Technology, will lecture for the first half of the present year on inorganic chemistry, and Charles A. Kraus, research professor of chemistry at Brown University, on advanced inorganic chemistry. Miles Standish Sherrill, professor of inorganic chemistry at the Massachusetts Institute of Technology, will lecture through the entire year on advanced physical chemistry. Professor Muneyoshi Yanagi, of Kyoto, Japan, will lecture on Japanese art and will serve as a research fellow in the department of fine arts.

VISITING professors at Yale University for the coming year are Laurence B. Packard, Amherst College, history; Carl S. Knopf, University of Southern California, Old Testament; Morris R. Cohen, College of the City of New York, philosophy; Roger S. Foster, Harvard University, law; Dixon R. Fox, Columbia University, history; Sherwood O. Dickerman, Williams College, Greek language and literature.

ADDITIONS to the faculty of Hunter College include two visiting professors from Europe, Marcel Braunschvig, known in this country for his texts of French literature, and Domaso Alonso, professor at the Centro de Estudios Historicos at Madrid, who in 1927 won the Spanish national prize for literature awarded by the minister of public instruction.

DR. CHARLES BRUNEAU, of the University of Nancy, France, is visiting professor of literature at Bowdoin College under the Tallman Foundation.

DR. PAUL H. MUSSER, assistant professor of English, has been appointed dean of the college of the University of Pennsylvania to succeed Dr. Robert Belle Burke, who is now convalescent after a long illness and who asked to be relieved of the deanship. Dr. Burke will continue his connection with the university faculty as professor of Latin.

W. A. LLOYD, director of the extension service at the University of Hawaii, has been accorded the status of dean, coordinate with the deans of the colleges at the university. He has also been included as a member *ex officio* of the faculty council. Dean Lloyd, who was in charge of the western states region for the office of cooperative extension work, left Washington for Hawaii early last fall on a year's leave of absence.

DR. J. H. INMAN, of Illinois Wesleyan University, has been appointed head of the department of education of Simpson College at Indianola.

WORTH MCCLURE, formerly assistant superintendent of schools at Seattle, Washington, has assumed the newly created professorship of elementary school administration in the State Teachers College at Buffalo.

DR. W. E. GORDON, of the department of education of Findlay College, Ohio, has been appointed head of the department of high-school teacher training and of the training of Sunday-school teachers.

ADDITIONS to the faculty of Brown University include Willard C. Beatty, from Wesleyan Uni-

versity, and Chelcie C. Bosland, from the University of Minnesota, both of whom will be assistant professors of economics; Dr. William A. Noyes, associate professor of chemistry from the University of Chicago; Dr. Henry B. Van Hoesen, assistant librarian, from Princeton; Dr. Norbert Wiener, visiting professor of physics, from the Massachusetts Institute of Technology, and Arthur M. Banta, acting professor of biology, from the Carnegie Institution at Cold Spring Harbor, N. Y. Dr. Samuel T. Arnold is acting dean in place of Dean Otis E. Randall, on sabbatic leave.

At the University of Vermont in the College of Agriculture, Professor Kenneth J. Sheldon is to succeed the late Professor F. B. Jenks. V. R. Yates, who has been assistant professor of mechanical engineering, will be acting head of that department this year.

To fill the vacancy caused by the leaving of D. W. Malott, Theodore C. Streibert has been added to the administrative board of the Harvard Business School. John C. Baker has taken over Mr. Malott's position as assistant dean in charge of publicity, while Mr. Streibert now occupies the place formerly held by Mr. Baker.

Dr. Lewis F. Pilcher, for the past three years vice-dean of the school of fine arts at the University of Pennsylvania, has been appointed head of the department of architecture and professor of architectural design at the Pennsylvania State College. He succeeds Professor A. L. Kocher, who resigned in 1926.

Dr. C. C. Little, formerly president of the University of Michigan and now in charge of the Roscoe B. Jackson Memorial Laboratory for Cancer Research at Bar Harbor, Maine, has been appointed to be managing director of the American Society for the Control of Cancer.

R. J. McKinney, formerly director of the High Museum of Atlanta, has been appointed to succeed Myric C. Rogers, as director of the Baltimore Museum. Mr. Rogers assumes the directorship of the City Art Museum of St. Louis this month.

John P. Tilton, formerly on the teaching staff at Tufts College and associated with the psychological laboratory at Harvard University, will be in charge of one of the groups in business psychology at the Babson Institute, Wellesley Hills, Massachusetts.

Professor Marvin S. Pittman, director of rural education at the University of Michigan, recently conducted daily lectures before the convention of directors and inspectors of federal education convoked by Ezequiel Padilla, secretary of public education, at the Superior Normal School in Mexico City.

Professor Fletcher Harper Swift, of the school of education of the University of California, has returned to Berkeley after having spent the past year in Europe studying the policies of financing public educational institutions in England, France, Germany, Austria and Czecho-Slovakia. Professor Swift's research was made possible by a grant of $3,500 from the General Education Board.

Dean Roscoe Pound, of Harvard Law School, has been granted leave during this academic year for his work in Washington in connection with the National Law Enforcement Commission. During his absence Vice-dean Joseph R. Warren will act as dean.

President Henry S. Coffin, of Union Theological Seminary, New York, is an American delegate to the Union Assembly in Edinburgh. He has been invited to preach in the Barony Church, Glasgow, on October 6.

An Associated Press despatch reports that Yenching University began its formal opening exercises on September 27 in connection with the dedication ceremonies postponed two years ago because of unsettled conditions in China. Many well-known American and Chinese educators attended. The university, which is chartered under the laws of New York and has more than 700 students, is situated on a site of 130 acres several miles outside Peking's walls, formerly the summer garden of a prince. Those attending the ceremonies included Frank Warner, chairman of the board of trustees, of New York; A. J. Stock, of Detroit, a board member; Professor James T. Shotwell, representing Columbia University; Professor George Black Stewart, representing Princeton University and the Auburn Theological Seminary; Professor Adolphus Miller, of the Ohio State

University; Professors Robert Parks and Quincy Wright, of the University of Chicago; Professor James H. Woods, of Harvard University, and Mrs. D. V. Lin, of Wellesley College.

THE Institut International de Bibliographie, the headquarters of which is in Brussels, held its annual session this year at the Imperial College of Science and Technology, South Kensington. The session opened on September 16 with a meeting of the council. The president is Professor A. F. C. Pollard, and among the countries which sent delegates are France, Germany, Switzerland, Belgium, Holland and Czechoslovakia.

THE New York State Council of School Superintendents opened their forty-seventh annual meeting at Lake Placid Club on September 30 continuing to October 2. Harry W. Langworthy, of Gloversville, N. Y., president of the council, presided. Approximately 500 superintendents were expected to attend the sessions. Headquarters of the council were in the Lakeside Club house. Revision of the elementary curriculum was the general subject for discussion at the opening session. Dr. J. Cayce Morrison, assistant commissioner of the State Department of Education, was expected to make the opening speech. Among superintendents scheduled to present their views in the general discussion were Alexander W. Miller, of Glens Falls; Ward C. Moon, of Poughkeepsie; Robert K. Toaz, of Huntington; W. H. Holmes, of Mount Vernon; Frederick R. Darling, of Dunkirk, and Frank C. Densberger, of Kenmore. Tuesday's sessions were to be devoted to a discussion of revision of the secondary curriculum. Dr. William J. Cooper, U. S. Commissioner of Education, consented to discuss the topic from the national point of view. The city aspect was to be told by Dr. John L. Tildsley, district superintendent, New York City, while the state presentation was to be made by W. W. Coxe, chief of the Educational Measurements Bureau.

THE annual meeting of the American Association of Collegiate Registrars will be held in Memphis, Tennessee, on April 15 to 17, 1930. C. P. Steimle is secretary of the association.

PRESIDENT LEWIS, of Lafayette College, made preliminary arrangements in Paris, during the summer, for a conference on French backgrounds of American history, to be held at Lafayette in 1932. This conference will be held in connection with the centennial celebration of the college and will be participated in by leading French and American historians.

THE National Advisory Committee on Education, consisting of the forty-five members appointed by Secretary Ray Lyman Wilbur, will hold its second meeting in his office on October 14. Three additional members have been added to the committee, representing the Federal Board for Vocational Education. They are: Dr. Henry Suzzallo, of the Carnegie Foundation and special lecturer at Columbia University this fall; Paul W. Chapman, state director of vocational education, Athens, Ga., and Wesley A. O'Leary, state director of vocational education, Trenton, N. J.

THE National Committee of Nursery Schools will hold a conference of workers in Chicago from October 24 to 26. Those expected to attend are: Dr. Mary Dabney Davis, Bureau of Education; Abigail A. Eliot, director of the Training School of Boston; Lucy Gage, George Peabody College, Nashville; Arnold Gesell, the Yale Psychology Clinic; May Hill, Western Reserve University; Patty Smith Hill, Columbia University; Harriet M. Johnson, Bureau of Educational Experimenting, New York City; Leslie R. Marston, Greenville College, Greenville, Ill.; Anna E. McLin, Child Education Foundation; Anna E. Richardson, American Home Economics Association; Lydia J. Roberts, University of Chicago; Flora Rose, Cornell University; Douglas A. Thom, psychiatrist, Boston; Edna Noble White, Merrill-Palmer School; Charles W. Waddle, University of California; Helen T. Woolley, Columbia University; Lois Hayden Meek, Washington, D. C., and Rose H. Alschuler, Winnetka, Ill.

MAX EPSTEIN has given $1,000,000 to the University of Chicago for the erection of an art building. It is planned to establish an institute of fine arts which will not only form the nucleus of an extensive development in artistic education, but which, as the donor hopes, will be of distinct cultural benefit to the people of the middle west. Aside from undergraduate and

graduate instruction, the institute is designed through exhibitions, printed bulletins and radiocast lectures to give the public a better understanding of the principles of art and its function and place in life. The entire $1,000,000 is to be spent on a building, which will be near the new chapel of the university. The donor suggests that the institute should have a board of trustees apart from that controlling the university, but including in an interlocking directorate interested members of the university board, and should not be a department of the university. The reason is that a fund to assure operation of the institute as a teaching and research school must be obtained independently of the construction foundation. Such a board of trustees is now being formed by the donor and President Hutchins. One of the duties of that board will be to obtain money.

THE Brush Foundation, established by the late Charles F. Brush to investigate race improvement and birth control and endowed by him with $500,000, will take up headquarters in the Medical School of Western Reserve University. Dr. L. Dewey Anderson is director of the foundation.

A CHAPEL is to be built opposite to the Cathedral of Learning of the University of Pittsburgh. It will be known as the Heinz Memorial Chapel and will be erected with funds given the university by the family of the late H. J. Heinz and others.

BLUFFTON COLLEGE has successfully completed a campaign which increased the assets of the institution more than $400,000. $50,000 was given for the purpose of erecting a library building and $50,000 for endowment of the library. The library building is being erected and will be ready for occupancy at the opening of the second semester.

WEST VIRGINIA WESLEYAN COLLEGE at Buckhannon has received a check from the General Education Board of New York for $30,886.10, the third settlement of a total amount of $105,000, which is to be used as permanent endowment for the college. Under the arrangement the college will receive a further $20,000, providing it can raise its quota by November.

NORTH YARMOUTH ACADEMY at Yarmouth, Maine, will receive a gift of $100,000 from Cyrus H. K. Curtis, of Philadelphia. A year ago the principal of the academy, Stanley W. Hyde, and the trustees mapped out a campaign whereby they voted to raise $150,000, but this gift leaves but a third of the amount to be contributed by friends and alumni. Mr. Curtis's gift makes possible the erection of a gymnasium costing $25,000, an auditorium for $35,000 and a $40,000 central educational plant.

POSSIBILITIES of reopening Des Moines University, either as a denominational institution or as a combination of the College of Commerce and the Des Moines College of Pharmacy, are being discussed, following a recent announcement by the trustees that the school would be discontinued as a Baptist fundamentalist organization. Dr. H. C. Wayman, the deposed president of the university, who is now at Newport, Ky., advocates reopening the university as a denominational school. The suggestion that the two Des Moines colleges jointly operate the property was being made by business men.

WESTMINSTER THEOLOGICAL SEMINARY, organized as a protest against the policy at Princeton Seminary, was opened at Philadelphia on September 30. Announcement of the campaign for funds was made by Fred M. Paist, chairman of the executive committee. He said the school would operate on a present budget of $65,000 in its temporary quarters, and that most of this sum had been obtained. Of fifty students enrolled for the opening of classes, twenty are former students of Princeton Seminary. The faculty was announced as follows: The Rev. Robert Dick Wilson, professor of Semitic philology and Old Testament criticism; the Rev. J. Gresham Machen, professor of New Testament; the Rev. Oswald T. Allis, professor of Old Testament history and exegesis; the Rev. Cornelius Van Til, professor of Apologetics; the Rev. R. B. Kuiper, professor of systematic theology; the Rev. Paul Woolley, instructor in church history, and the Rev. N. B. Stonehouse, instructor in New Testament.

THE foundations have been laid and the structural steel work on the new Hunter College building on the site of the old Jerome Park Reservoir in the Bronx, New York City, is now under way, according to announcement recently made by Dean Lewis D. Hill. The building will

be ready for occupancy in September, 1930. It will have a frontage of 214 feet and a depth of 55 feet. It will have two wings 75 feet by 11 feet and a rear extension in the center for an auditorium. The plans provide for approximately ten classrooms on the first floor, fifteen on the second, eight on the third and seven on the fourth floors. The building will also house laboratories, a sewing room, students' exchange, observatory and library. It is planned to erect a group of fourteen buildings on a quadrangle. The campus will be enclosed with a wrought-iron fence with massive gates to be given by the various classes of the institution.

DISCUSSION

ARITHMETIC IN THE SCHOOLS

THE writer of this article recently issued a small monograph, "Consumers' Arithmetic," which was published in the spring by the Bureau of Publications of Teachers College, Columbia University. It was the result of an extensive investigation into the actual uses which are made of arithmetic in society to-day aside from vocational uses. The findings which are summarized below are considered by some so revolutionary that they drew fire from many sources. The Associated Press and the syndicated news bureaus published certain parts of the findings and the criticisms of educational experts. For reasons which may be difficult to explain, this small book has been widely discussed in many daily and weekly newspapers from coast to coast. In general the findings have been enthusiastically approved as sound. In only a few cases the conclusions of the study have been condemned in wholesale fashion.

Three main points in the conclusions are: (1) This study furnishes a basis for selecting the optimum content to be taught in the public elementary schools. (2) More than 60 per cent. of the adult population of the United States use little if any arithmetic beyond the four fundamental operations. (3) The public elementary schools have been teaching more than 85 per cent. more arithmetic beyond the four fundamentals than is required to furnish all the needed and useful arithmetic in adult life aside from vocational uses. A few of the adverse criticisms are given and discussed in some detail herewith.

An eminent educational critic and mathematician in one of the largest universities in the country and quoted in the largest daily papers charges that the writer of the monograph would not dare to put into practice his theories based upon his findings in the State Teachers College, of which the writer is president, in the training of arithmetic teachers. He gives a sweeping condemnation of the findings and the (social) philosophy underlying the survey. To quote:

> He [Dr. Bowden] says, I take it, that there are mathematical factors which he hasn't used in the last two months, so why not abolish the factors. He might as well say that there are words in the dictionary which he has not used in the same period, so that therefore these words should be abolished.

The faulty logic and analogy here are apparent to any one. This critic evidently has not analyzed the findings nor has he thought through the whole problem of vocational education and "cultural education for the consumer." To be sure, the writer of the monograph would not practice the theory in the training of arithmetic teachers. For these teachers arithmetic training is vocational training and neither theory nor the findings are involving vocational mathematics at all. The study concerns only "consumers," users, of arithmetic aside from the vocational uses. This distinction between "consumers" and vocational uses is made and applied to the elementary schools because these schools are not now and have never been and never should be vocational schools. In the very nature of their purposes and organization they could not be such. This confusion of aims has befogged the issue of curriculum construction for the past hundred years or more, and will continue to do so as long as educational people and eminent mathematicians do lack the clarity of thinking which is demonstrated by this critic. It would seem that if mathematics had the value in common life which it was once accredited, it would have certainly had its beneficial effects on this critic.

It is a peculiar type of reasoning on the part of some when they say that if we keep on eliminating such fundamental parts of arith-

metic and other traditional subjects as recommended in this study there will not be anything left for the schools to teach. Those who reason in this way forget that culture is cumulative and that at the present time we have so much of human culture from which to select, and very essential at that, that we need have no fear of deleting from the public-school curriculum very much of the present quantity now taught. The kind should be changed. There is much more to teach now which is vastly more important and more fundamental and more life-giving, intellectually and culturally, than much that is now required. This study under discussion is only one further step in the analysis of the problem of vocational education.

There is probably an opinion, though not expressed, in the mind of this critic that there is great disciplinary value to mathematical study, "transfer of training," etc. There are many values in the study of mathematics which are non-vocational which should be developed by the schools. For example, "number sense, mathematical appreciations, comprehensions of quantity, space, distance, etc., love of mathematics" and others. But these are derived secondary values. These values are the result of the method of presenting the content which we have found to be useful. These values may be realized by learning any consistent amount of any content and are not confined to any particular bit of arithmetic content. If these values are not realized the fault is largely with the method and not with the abbreviated content recommended by this study.

One critic avers that the trouble lies not so much in the amount of the content as in the stupid teaching of mathematics. It is not the large number of processes to be taught but rather the method wherein lies our difficulty. We may develop the best methods possible, have the most efficient teachers in the classroom, and still be faced with the question, "How valuable is this or that process after it has been thoroughly learned?" Good methods of instruction are essential to our modern educational theory, but any amount of these will not answer the above question. The idea of better methods seems to be contained in the numerous attempts at "socializing" the content of arithmetic. It is interesting in this connection how many educators and writers there are who have a minimum training in sociology who try to connect everything they write with the "social" concept. Social seems to be interpreted as the watchword of the present age, and like all other watchwords it is used to the limit. Recently there has appeared a series of arithmetics entitled "Social Arithmetics," as though there were a kind of arithmetic which is *not* social.

And, again, it was urged by one critic when he considered the great amount of reduction recommended in this study that it is possible that there will soon develop in our machine age a very complicated and advanced type of arithmetic not yet thought of in dealing with air travel, radio, etc. To this it can be said that that is certainly possible, but we do not know nor can we in the nature of our rapid development ever know what is in store for us. If this advanced type of mathematics does develop it will be vocational mathematics, which does not concern this study. At least, the entire population will not need to learn it. A very small per cent. of the total population will need it and therefore it should not be included in the elementary-school course. One thing is clear: this hypothetical advanced type can not be learned by any amount of the wide range of processes now in existence in the elementary curriculum. When, however, we reach this advanced form we will have "adult education" and continuation schools to care for any increment yet to be added to the recommended optimum amount. No scheme or study yet devised has supplied this extra amount, and to keep the enormous amount of mathematics which is now in the curriculum and to require every one to learn it in the faint anticipation that a peculiar need may arise some day is preposterous in the extreme. No such thing as a sudden appearance of any universal need can come in any social group which will require 75 per cent. of its members to gain mastery. Inventions do not come that way, society does not develop that way, culture of any description does not grow that way. This is particularly true with anything as technical as mathematics. No society has ever been so inflicted with a sudden impossible requirement.

One critic asked the question, "How many people would buy an arithmetic text built on

the basis of the findings in this study?" To this question we reply that probably not many, for we are still so traditional in our curriculum and crowd-minded in our thinking that we can not accept any radical change from the established order. We can not determine the shape of the earth by vote nor can we determine the amount and kind of arithmetic to be taught to elementary children by mere opinion, even opinions of experts.

When one reads over the criticisms of any such attempts at curriculum revision as this study represents one can readily see additional reasons for the Civil War. Prejudice and emotionally toned opinions prevent one from being convinced, even in the face of objectively determined data.

A. O. BOWDEN
NEW MEXICO STATE TEACHERS COLLEGE

CABINET EDUCATION

IT is all too easy to introduce and secure the passage of resolutions. They can often be carried by acclamation without debate. This is as true in the case of a federal department of education as in other matters. Comparatively few give any deep study or adequate thought to the subject. There has been, however, a substantial body of educational people who have doubted the value of a federal department in educational administration. They have not been as vociferous as the ready advocates of the cabinet plan but they have given discriminating study to the proposal and careful consideration of its meaning and implications.

One may perhaps be justified in assuming that the central motives for this attempt to drive education into unnatural channels lie in three directions: (1) Personal and political ambitions; (2) belief that the educational treasury will be more adequately supplied with funds for federal activities in education; (3) as a corollary of 2, a belief that the achievements of education under the cabinet plan will be greater and more far-reaching than under the bureau plan. The first motive is not a legitimate one. The other two are not founded on anything stronger than assumption. There are no facts or even well-founded prophecies of facts to support them. With greater justice it might be claimed that a bureau of education may be easily organized so that all legitimate educational activities of the national government may be at least as adequately and effectively provided for as through a federal department of education. It is surprising how far specious arguments have gone.

The movement in question is just one more exhibition of the easy tendency toward paternalism in government, and it comes at a time when we like to believe that the trend of opinion is the other way. Activities that belong preeminently to the states should not be saddled on the central government. It is a lazy and indirect solution of educational problems. These problems require more active and direct effort which is local rather than general.

Educational research and its conclusions on the part of a central government should be confined to the common denominators of different phases of education and to dissemination of results for the guidance and stimulation of the several state systems of education. The most vital research and study must always be local where problems are nearer and clearer. Being different for different areas the problems must be met by specialized study within the area.

Secretary Wilbur's address in favor of a bureau instead of a department of education, at the May meeting of the American Council on Education, is a most notable contribution to educational discussion. For purity of English, clarity of statement, statesmanlike attitude and unanswerable logic it is a model educational document.

Dr. Finegan's letter printed next to the secretary's address in the final June issue of SCHOOL AND SOCIETY presents in excellent form certain general arguments for a federal department of education every one of which could be as readily, even more readily, used to support the secretary's judgment as to a bureau of education.

Some time ago the average term of office of a cabinet member was found to be materially less than a presidential term. Education, if anything, requires stability for its best growth. It needs to be removed as far as possible from political change and transient administration.

The average term of a commissioner of education is several times that of a cabinet member, and might be extended indefinitely. From the beginning of the bureau of education terms of service have been so long that the list of commissioners is a very short one.

The best results in education require stability. Local initiative is indispensable. Such leadership, guidance and inspiration as is legitimate for the federal government to give will come most adequately and effectively through the principles and organization of a bureau of education so well stated by Secretary Wilbur.

Dr. Finegan in his letter, referring to the two and a half billion dollars spent annually for education in this country, says that the nation "should afford the states adequate guidance in the operation of the enterprise upon which this vast sum is expended." He states categorically that a federal department (with cabinet position) would be the means of diverting large sums of money now expended ineffectively on education into channels which would bring larger returns. Incidentally, it may be said that a total of two and a half billions expended by the national government and all the states and territories for educational purposes can hardly be called a vast sum. But what is more to the purpose here is that there is no proof whatever that a federal department is needed for the purpose in question. Clearly Secretary Wilbur's bureau of education could compass the same results.

Now there is amazing waste in education, it is humiliating to have to acknowledge it, and it might in large part be eliminated. Comparatively recently an expert survey of industry discovered that the annual waste was many times the total annual expenditures for education. Under the auspices of the Department of Commerce this waste was immediately strikingly reduced. It was done by *individual* industries through their *individual* study and organization under the great secretary's inspiration. Secretary Hoover's part was not enacted because he was a cabinet member, but because he was Secretary Hoover. He could have done it perfectly as head of a bureau such as Secretary Wilbur has in mind. Such a federal bureau with the increase in funds that is to be confidently anticipated is entirely adequate to give all needed national guidance and incentive. The main road to progress lies through local research, organization and initiative.

A federal department of education would be a calamity.

FRANK WEBSTER SMITH

QUOTATIONS

ADULT EDUCATION IN ENGLAND

THE survey of adult education in Lancashire and Cheshire for the last quarter of a century, which has just been issued by the Board of Education, is an encouraging document. At first sight, as the report points out, the figures may seem small compared with the developments which have taken place in some other parts of the country, particularly in London, where a great variety of new enterprises have been undertaken since the war and since the passing of the Education Act of 1918. The special value of the work accomplished in the districts lying within the periphery of the Universities of Manchester and Liverpool is to be found in the achievements of the tutorial classes, whether arranged by the Workers' Educational Association or by joint committees of the two universities. It is clear, however, that the whole field of possible endeavor in the sphere of adult education has not yet been covered, and that while the leaders of the Workers' Educational Association have rightly concentrated their energies upon creating tutorial classes and classes of a preparatory type, aiming at a high standard of work, there are opportunities for further developments on the lines which have been followed with much success in London in the setting up of the literary and the men's institutes. It is to be hoped that a survey of adult education in Greater London will follow the useful inquiry that has been made into the work of the northern areas. That the task will be considerable may be gathered from the fact that the London region "contains already a greater volume and range of work than was to be found in the whole country before the war." Nevertheless, the number of

university tutorial classes in the north-western area is 100, compared with fifty-two in Greater London. The tradition of work of a university standard in Lancashire, Cheshire and the West Riding grew out of the beginnings of the university extension movement, with its first lectures organized on a systematic basis in 1873. In the earlier days of the movement, continuous courses were held in many towns in Lancashire and Cheshire, and were welcomed by the cooperative societies. There had been yet earlier experiments at Crewe in 1867. The first "class" arose in Rochdale out of lectures given at the invitation of the Rochdale Pioneers Cooperative Society. The cooperative societies were among the first bodies to welcome courses of extension lectures, and audiences of many hundreds were common even a generation ago. The activities of the Workers' Educational Association, therefore, touched fruitful soil, and the north-western district was one of the first to be organized with its own constitution forming, as the survey points out, "the backbone of the new movement." The standard aimed at has been and remains high. The objective "was nothing less than to provide courses of university standard for working-class students who were willing to sacrifice their leisure for the pursuit of some branch of liberal education in which they were interested." Nor has this objective been gained by facile or superficial enthusiasm. The purpose of the association was to gather together compact groups of students willing to undergo the discipline of reading and thinking, and of producing written work worthy to be measured by academic standards. These aims, accompanied by a democratic atmosphere and a spirit of fellowship and cooperation, have characterized the tutorial classes ever since their establishment. Probably few classes could produce 150 essays of considerable length and more than average quality in one session, but the fact that this was possible recently in one small town gives evidence of what can be achieved when classes continue from year to year and the work is in the hands of a sympathetic, wide-minded tutor.

It is clear from the survey that there are a number of matters concerning the future of the adult education movement which need further exploration. The university tutorial class is excellent, as the report reminds us, for those who can respond to its somewhat severe demands, but it does not provide for a very large number of men and women who may be presumed to have some capacity for higher education. A table showing the occupations of 1,812 students attending 103 university tutorial or preparatory tutorial classes in connection with Liverpool and Manchester Universities is significant. Rather more than half of the students follow clerical or professional occupations (over 200 are teachers in elementary schools), and, while the main occupations of the district are represented, only about 500 workers are found in the list who are engaged in the staple industries of cotton and iron. The question therefore arises as to the provision which is being made for those men and women who, while able to profit by higher education, can not give the time and effort needed to meet the more exacting demands of the tutorial class. The Board of Education's advisers consider that, more especially for the study of literature, the requirements of students might be met by the adoption of university extension courses, and they go on to point out that this is a matter which needs the sympathetic cooperation of the universities, the voluntary organizations and the local authorities. The latter, particularly in the smaller areas, should be active in providing courses of an elementary and preparatory type. There need be no overlapping of function, but it is essential that every avenue should be explored to ensure that no adult student in the kingdom need go without some opportunity for further education and further study. The demand for courses in economics and industrial history has usually been the pivot from which other classes have branched out, yet many students come to these classes, and indeed to other classes, without any general historical knowledge whatever. Natural science, again, has never attracted students in large numbers. Yet its value can not be overestimated. Preparatory work in science is a useful field for those local authorities which are not prepared to develop more advanced courses. The success of such activities will, of course, depend on the kind of teaching provided. The value of the tutorial class has been developed mainly through the personal interest and devotion of individual tutors and of indi-

vidual organizers. The local authorities have in a good many cases followed the example of the voluntary bodies, and have stimulated the interest of their students by giving them a certain measure of responsibility in the choice of subjects and in opportunities for discussion. A great deal still remains to be done. But the task of the local authorities, the voluntary bodies and the universities can only be accomplished successfully if all three cooperate in the endeavor to ensure that adult education in the future shall become a vivid reality in the life both of the town and of the countryside.—*The London Times Educational Supplement.*

EDUCATIONAL RESEARCH AND STATISTICS

THE ORAL VERSUS THE MIMEOGRAPHED TRUE-FALSE

ALTHOUGH the mimeographed form seems to be the more widely accepted means of administering the true-false examination, teachers occasionally find it more convenient to administer the true-false orally. For example, in some colleges and in many high schools inadequate funds are provided for stenographic service. Moreover, when an instructor is working up a new course he is frequently unable to predict accurately the ground that will have been covered on a given date. Under such circumstances it is difficult to meet the standing regulations of the stenographic bureau with regard to early requisitioning. Then too, a few experienced teachers hesitate to mimeograph their true-false quizzes for fear that copies thereof may be obtained by unauthorized students. Some of these teachers have definite opinions regarding abuses that are apt to occur when unauthorized students obtain lists of true-false statements. For each of the above reasons the true-false quiz is sometimes administered orally. It is clear therefore that the relative value of the oral presentation is a matter of more than theoretical interest.

During the spring of 1929, the writer assembled certain data bearing upon the relative value of the oral presentation of the true-false. The following procedure was employed: In certain of the writer's classes in educational psychology eighty-five true-false statements were presented, first orally, and then (before the students had left the room) the eighty-five statements were again presented, this time in mimeographed form. Since it was always necessary to complete the two modes of presentation within approximately fifty minutes, the technique of presentation was a matter that required forethought. In view of the careful preliminary work that was required, a brief description of the writer's technique will perhaps be in order at this point.

METHOD

As the students entered the classroom on examination days each was given a ruled sheet of paper. After calling the class to order the students were instructed: (1) to print their names in the upper right-hand corner of their ruled sheets of paper; (2) to write the numbers from 1 to 30 inclusive, beginning in the upper left-hand corner and proceeding down the page; (3) to write the numbers from 31 to 60 inclusive, starting this second column of figures two inches to the right and parallel to the first column, and (4) to write the numbers from 61 to 85 inclusive, two inches to the right and parallel to the second column. The above precautions were necessary in order to facilitate scoring, for unless answers are spaced uniformly, it is difficult to manipulate a scoring key.[1]

The preliminary instructions consumed usually the first five minutes of the class period. If the class members are taking their first oral quiz they may now be told the purpose of their preparations. At this point they may be informed also: (1) that each statement will be read twice; (2) that true statements are to be indicated by a plus sign (+) placed at the left of the corresponding number on the sheets of ruled paper; (3) that false statements are to be indicated similarly by the use of a minus sign (−), and (4) that no questions will be permitted regarding the true-false statements.

[1] Time may be further economized by instructing the students to number every fifth or every tenth line only. If this latter suggestion be followed, it will be doubly necessary for students to *space* their numbers accurately.

In the experiment here reported the examiner (the writer) now read the first true-false statement from his examination paper, enunciating each word as distinctly as possible. At the conclusion of this first reading, the examiner counted silently and as rapidly as possible from 1 to 10, his articulation being inhibited in so far as possible. With no other delay than that involved in counting from 1 to 10, the examiner then reread the first statement and he again counted from 1 to 10 before proceeding to the second. By this means each of the eighty-five true-false statements was presented twice within a twenty-five-minute interval.

Preliminary try-outs revealed that the above procedure affords the following advantages: (1) When each statement is read twice, the rapid count from 1 to 10 provides sufficient time for students to recognize (and to indicate) its truth or its falsity. (2) Since the students know in advance that no statement will be read more than twice, they make a sincere effort to understand the *first* reading. (3) The uniform length of the pauses between statements permits the students to anticipate accurately the reading of successive statements and they are thus enabled to concentrate maximum attention in the direction of the examiner at the appropriate moment. (4) The above plan also permits the students brief intervals of more or less complete relaxation. Both time and energy are thus conserved.

Following the oral presentation the examiner assembled the results of the oral quiz; simultaneously he distributed mimeographed copies of the identical set of eighty-five true-false statements. The students had been informed previously that the oral and the mimeographed examinations were each to receive grades and that these grades were to count equally in making out term grades. Since the oral presentation *always preceded* the mimeographed presentation, it seems unlikely that the order of presentation prejudiced the quiz results in favor of the oral presentation.

Two sets of data were thus assembled for a total of nine classes in educational psychology. The next step was that of determining the reliability coefficients for the two modes of presentation. Reliability (or self-consistency) was investigated by the familiar procedure of correlating the scores earned on odd and the scores earned on even statements. Table I presents the reliability coefficients of the two modes of presentation for the nine classes of students. Comparison of columns 1 and 2 reveals that in five of the nine classes the oral presentation was slightly more self-consistent than the mimeographed presentation. Moreover, the average of the nine reliability coefficients is slightly larger for the oral than for the mimeographed presentation. Although this difference is of negligible magnitude, it reveals nevertheless that for the study here reported the oral presentation was no less reliable than the mimeographed presentation.

TABLE I

COEFFICIENTS OF CORRELATION OBTAINED BY ADMINISTERING TRUE-FALSE QUIZZES BOTH ORALLY AND IN MIMEOGRAPHED FORM

Date	Hr.	Cases	Mimeographed odds *versus* mimeographed evens	Oral odds *versus* oral evens	Oral odds *versus* mimeographed evens	Oral evens *versus* mimeographed odds
			(1)	(2)	(3)	(4)
2/21	8:00	21	+.490	+.603	+.570	+.554
"	11:00	27	+.364	+.505	+.406	+.457
"	2:00	26	+.602	+.455	+.483	+.560
3/15	8:00	21	+.644	+.586	+.290	+.479
"	11:00	26	+.317	+.374	+.413	+.398
"	2:00	25	+.361	+.554	+.545	+.549
5/3	8:00	18	+.394	+.628	+.350	+.505
"	11:00	23	+.487	+.356	+.251	+.479
"	2:00	26	+.591	+.544	+.612	+.425
		Ave.	+.472	+.512	+.439	+.489

The next problem was that of determining whether the intercorrelations were as large as the self-correlations. The findings are presented in columns 3 and 4 of Table I. Column 3 presents the r's obtained when the oral odd statements were correlated with the mimeographed even statements. Column 4 displays similarly the r's obtained by correlating the oral even statements and the mimeographed odd statements. When column 3 is compared with column 1 it is found that in five of the nine classes the oral odds correlated more closely

with the mimeographed evens than the mimeographed statements correlated among themselves (as revealed in column 1). The situation is similar when column 4 is compared with column 1, *e.g.*, in five of the nine comparisons the oral evens correlated more closely with the mimeographed odds than the mimeographed statements correlated among themselves. In view of the fact that the oral presentations thus yielded results which correlate as closely with the mimeograph results as the latter correlate among themselves, it may be safely concluded that, in so far as the present study is concerned, the oral and the mimeographed presentations measured identical abilities and that they measured these abilities with approximately equal effectiveness.

TABLE II

ERRORS MADE WHEN TRUE-FALSE QUIZZES WERE ADMINISTERED BOTH ORALLY AND IN MIMEOGRAPHED FORM

Class	No. of students	No. of questions	No. of errors on mimeographed form	No. of errors on oral form	No. of answers. (Each kind)
A	27	55	344	336	1,485
B	32	55	497	482	1,760
C	25	55	291	266	1,375
D	32	55	443	445	1,760
E	30	52	273	259	1,560
F	37	52	375	348	1,924
G	21	85	485	458	1,785
H	27	85	480	515	2,295
I	26	85	571	587	2,210
J	21	85	461	425	1,785
K	26	85	528	513	2,210
L	25	85	596	558	2,125
M	18	85	427	435	1,530
N	23	85	535	530	1,955
O	26	85	729	764	2,210
Total	396	1,089	7,035	6,921	27,969

The writer was interested to know whether his students made more errors when the true-false was presented orally. He therefore tabulated the total number of errors made in six preliminary examinations and in the nine above-mentioned examinations. Table II presents the results of this tabulation. Table II shows that for a total of fifteen classes the number of errors for the written and for the oral presentations were 7,035 and 6,921, respectively. The students thus failed on 25.15 per cent. of the mimeographed statements and 24.74 per cent. of the oral statements. These differences are slight. They indicate, however, that these students were able to do fully as well on the oral as on the mimeographed presentation.[2]

It is almost superfluous to remark that this study does not purport to prove that the oral presentation is equally fair to *every* student. For example, in his preliminary studies, the writer found one student who was slightly deaf. It is obvious that oral presentations of the true-false would be unjust to such a student. The writer thought also (the evidence was not conclusive) that he found one or two students who consistently did somewhat better on the oral presentation. It is possible of course that as regards reading habits these latter students were careless or improficient, and that they therefore achieved less success when reading than when listening. It seems clear that neither mode of presentation will enable *every* student to make his best possible showing since a few students are likely to be handicapped by inferior hearing ability and a few others are likely to be handicapped by inferior reading ability.

In the present study the oral presentation was found to be fully as efficient as the mimeographed presentation. It is obvious however that this does not prove that *every* oral presentation of a true-false will be as efficient as a mimeographed presentation of the same set of statements. There are doubtless wide differences among instructors in ability to make themselves heard and understood. Moreover, size of classroom, number of students, length of true-false statements and a host of other factors will need also to be taken into consideration before a given instructor will be justified in concluding that his oral true-false is as efficient as a mimeographed one. By use of the procedure here described the teacher may easily discover whether his oral presentation is on the whole "just as good."

HARVEY C. LEHMAN
OHIO UNIVERSITY

[2] When taking the examinations the students sat always in alternate seats.

EDUCATIONAL REVIEW

Edited by WILLIAM McANDREW

PICTURING FRANK CODY

I SHOULD like to make you better acquainted with the new head of the National Association of Public-school Superintendents than you can be from reading the bare dates of his birth and promotions in the notices following his election. Because we grew up together I claim the right to mix my colors with affection and to lay them on with a more generous brush than is customary in painting the portraits of living men.

Schoolmasters for centuries were portrayed only by caricaturists. Some one ought to gather up the excellences of this kind of public servant and portray them for the encouragement of young men who would like to enter this profession. Let me try.

Frank Cody, although fifty-four of his fifty-nine years have been spent in schools, has failed to acquire the identifying marks which many of us older schoolmasters try to conceal. The painfully exact speech, the rather irritating sureness of assertion, the readiness to give an opinion upon every subject, the busy-and-bothered manner are lacking from Cody's composition. When French Strother conducted an experiment in reading portrait photographs to determine occupation, sixty-three respondents guessed Cody's picture was that of a banker; twenty-one said "judge"; twelve, "merchant" or "business man"; one guessed "minister," and three, "professor." Cody's comment was that the three last estimators combined comprehension with compliment. We have had eminent schoolmen whose realization of their own importance seemed a heavy burden on them. I used to work for one whom we all called "His Royal Pomposity," who trailed yards of dignity behind him, creating a strong temptation to step on it. William H. Allen used to delight in playing with the conceit of a noted superintendent who was much given to saying, "through my instrumentality," "at my suggestion," "through my efforts" and "in my judgment." Charles Bardeen took delight in measuring the speeches of another schoolman to compute what per cent. of his spoken matter was autobiographical. I never saw Cody on a high horse; I never heard him talk of himself. Yet I have known him intimately for more years than most.

A happy boyhood.—We came from the same beauty spot in the loveliest state in the Union. The pioneers who founded the commonwealth chose as the motto for Michigan's official seal: "If you seek a beautiful land, look around you." They had seen and loved the clear stream, the Huron, which gathers the outlets of the blue lakes in Oakland County and, sweeping around through pretty villages, turning the wheels of mills, winding through woods and fields, threads Ann Arbor, Ypsilanti and Belleville upon its silver cord before it glides through the sweep of meadows to Lake Erie. In the last-named town Timothy Cody and Clarissa Kipp, his wife, on the last day of December, 1870, told the neighbors, "It's a boy." The Codys were what Austin George called well-to-do but honest parents. Father Cody had a store. I remember it well. It had dry goods, hardware, house furnishings and, in glass jars with bronze covers, for a penny a stick, white and yellow and red and amber candy, the making of which has now, alas, become a lost art. This boy, with an amazing clairvoyance of the character that was to ripen in him, his mother named Frank. Every one in Michigan has always called him that. If you said "Professor Cody"

or "Dr. Cody" or "Superintendent Cody" to any Wolverine he would answer, "Oh, you mean Frank."

Belleville was a good town to be a boy in. There were hills to climb, woods to explore, hunting and fishing, and the best and cleanest swimming nooks in the deliciously shady river like cool liquid velvet. Then there were the circuses: Robinson's, Kent's, Forepaugh's, Van Amberg's and Barnum's, traveling overland by wagon, not by rail. At night the shutters on the animal dens were raised as the procession rolled by, for the beasts needed air. What fun to gather boxes from behind Mr. Cody's store and to take them out to the edge of town where the main road from Toledo or Monroe ran by to Ypsilanti. And when the caravan comes by we light the bonfire and see the whole menagerie for nothing. O boy! In winter there was skating for twenty winding miles if you were good enough for so much. There were bob-sled rides down the long hill to the bridge. There were candy-pulls and, when you were old enough, dances in the hall. I remember we used to sleigh-ride down from Ypsilanti to Codyville with Cub Berdan, Al. Stuck and John Wise, the best dance musicians in the county, and, after hours of glorious exercise, make away with oysters imported in square-cornered cans from Baltimore, Maryland.

All of which is to suggest to you that the genial Frank Cody had a happy bringing up, such as Mr. John B. Watson insists is good for the after life.

Teaching claims him.—The boy walked through the grades and the high school of his home town without a break and when not yet sixteen "allowed that he could handle" the district school at Willow Run, four miles to the northwest in the direction of Ypsilanti. He could. He did. The Belleville folks thought him a good teacher and gave him the room where fifth and sixth grade children were assembled. Here young Frank discovered that he liked to teach; he liked boys and girls; he liked folks. Josh Billings was a best seller in those days. No piece of his homely philosophy is truer than his declaration: "In all the world there is nothing more interesting than folks." Frank would learn teaching as a business. Up the river he comes to Ypsilanti, where, third in the history of the United States, had been founded the Michigan Normal School. Superintendent Sill, diplomat, humorist, educator, was then its president. Uncle Dan'l Putnam, philosopher, psychologist, teacher, was still a power. Frederick Pease, gentleman, scholar, musician, was in his prime. Austin George, one of the rarest combinations of scholarship and business sense, was in charge of the placement of students in positions. My note-book sparkles with sayings of Austin George: "The school board is the danger and the safety of the schools." "It's twice as hard to educate the school board as to teach the children." "Doubtless God knows what a school board will do, but He doesn't tell you." "Find the boss in the school board; borrow money of him whether you need it or not. It makes him interested in you." "If you have a good idea for advancing the schools get the head school board member to absorb it and to think it is his own." "Education is the greatest thing in the world but a board member thinks he is greater." George and Cody hit it off well together. George impressed upon him Josh Billings's belief in the necessity of contact with folks. "A schoolman should mix in business," was a maxim of George. He practiced it. He set aside a portion of his income for solid investments, real estate in his home town. He advised Frank to get behind the counter during vacation and to learn the way to gain and hold customers. Accordingly, I used to see young Cody selling clothing in the corner store of Ypsilanti, "giving 'em fits," as he used to call it. When the class of '91 marched up the center aisle of the old Normal Hall

to get its diplomas, Frank, now twenty-one years of age, secured his life certificate to teach.

A little stream, since made important by Henry Ford, is the Rivière Rouge. Where it runs into the Detroit was a settlement of glass-blowers and other workers organized into the town of Delray. In '91 it was growing fast and needed organization of its schools. The trustees came up to Ypsilanti looking for a man. "We've got a hard town in some ways," they told Austin George, "all sorts of people from all parts of the old world. They need to be brought together by some good mixer." "We have your man," said George, "He knows folks and likes 'em."

Detroit annexes him.—Cody took Delray. For five years he molded the civic and educational affairs of the settlement. He gave them grade schools, high schools, night schools, playgrounds, library service, entertainment. When Detroit, spreading itself in all directions, embraced the region of the Rouge it annexed Frank and his school system and made him principal of the high school he had developed. For seven years he continued working for his district until Detroit called him to supervise the playground and special educational activities of the entire city. Next year it made him assistant superintendent of schools and continued him in charge of the special departments. In 1919, at the age of forty-nine, the Belleville boy is made superintendent of the schools of what by phenomenally rapid growth had become the fourth city in America.

It is a perplexing town. French in origin, with an early influx of Germans, followed by accessions of immigrants from Poland, Ireland, Scotland, Russia, Italy and Greece, it has had outbreaks of civic corruption and violent crime waves as well as spasms of celebrated political reform. It has had school boards notorious for stupidity and crookedness. Once it had the inbreeding rule that no one not a graduate of its own high school might teach in its public organizations. Once it had board members in jail for outrageous bribery in connection with school supplies. A dozen years ago Detroit figured in educational literature as taking the lead in subjecting its teaching to the test of whether the pupils as taught had learned or not. The intending teachers in its training school were given courses in tests and in the interpretations of results so as to be able to carry into the schools from year to year the type of preparation which makes them realize that the main consideration is not whether they have jobs or not but whether the people are getting what they are paying for. When results were measured unhappy outcomes were evident. Teachers complained. Claims were made that the chief benefit of good teaching is "personality," which can not be measured. Even the good teachers, says Professor Judd in his "Scientific Study of Education," were afraid. They had been accustomed to the purely personal type of supervision based on opinion and answerable, when occasion demanded, by opinion. Teachers who were not sure of the success of their work were violent in their objections. The Board of Education, which at the beginning of the testing was composed of some of the cheapest politicians in the city, led the attack on what they termed a fad and a theory. But the community showed its appreciation of the type of school management intelligent enough to guide itself by exact studies of results. Detroit did away absolutely with the corrupt and inefficient board and elected in its place a group of honest citizens who are supporting scientific management and developing the schools along lines dictated by exact knowledge of what is being done.

The proof of the pudding.—Cody's argument for appraising school work is something his lay boards can understand. We are spending more on schools than on any other municipal service. This is the tax-

payer's money, earned by his sweat and given by his public spirit and self-denial. It is not honest for us to throw it into the schools and merely to hope that it will produce sufficient results. There are many ways of teaching. Some must be better than others. No productive organization ought to continue paying money for various processes without finding which sorts are given the best results. Every producing plant has a department of assaying, testing and appraisal.

It is significant that Detroit under this type of management has come into the front line of progressive school systems. Its Courtis has become a recognized authority on school appraisal. Chicago looked to Detroit for a director of a school-building program. When the editors of the *World's Work* wished, in 1924, to present a series of articles showing the progress of American public education they chose the schools supervised by Frank Cody for their leading article. There is something about the definiteness of his management that appeals to the man of affairs. Is there need of an adjustment of teaching salaries? Let us not have a wild emotional campaign to arouse pity for the poor, hard-worked teacher. Let us recognize that if we are to have good work we must have well-educated, well-fed, well-clothed, well-recreated men and women as workers. What does their education cost? What is the run of food prices here? What are the items, the duration and the cost of a wardrobe? With the facts and figures the superintendent lays a corrected salary schedule before the board of education and sees it adopted. This is the Detroit way.

The amazing increase of population size gave Cody and his colleagues a heavy responsibility in the way of providing school buildings. Gary, Indiana, has had the same crisis. What is this platoon-school plan there is so much howling about? Cody looks into it. One mayor of New York has clamored for it: another has assailed it as if it were an invention of the devil. What do mayors know about school systems? If one wishes to know how the platoon plan works let him ask the school principals who are trying it. A Detroit assistant superintendent is sent out to investigate. He returns and makes a report. The superintendent, the school-board members study platoon schools. The scheme is outlined to Detroit principals. Who has ability enough to make it work? A goodly number volunteer. Two are put in charge of the new scheme in their own schools. Teachers who find themselves in platoon schools against their wish are given preferred places elsewhere. The testers watch the results. The experiment is working. Principals are sent to study the plan. New platoon schools are started. The labor unions are said to be suspicious of the plan. Invite them to make a study of it. They do. They report themselves in favor. So the platoon plan becomes the official form of school organization for all new schools and for such of the old ones as have suitable buildings.

Restoring the American theory.—Again, the same foresight, study and planning come into play as new buildings are designed. The schools belong to the community. It should have full use of them. When building a school see that it is suited for the adult use we have been struggling to get in the old ones. By having a department of school planning functioning all the time the Detroit superintendent has seen his city cited as the model in current articles on community clubs, adult education and similar literature. In Delray, Cody saw the appeal and the efficacy of the scout movements for boys and girls. His experience in Detroit has made him the prophet of this service. The human and civic qualities sought in scouting, he says, are what the schools are for. The scout movement has tried them out and put them into effective form. If we had known enough we would have done it ourselves.

There is no use holding off because some one else has worked out a good plan. Let's use it. Accordingly Detroit is praised by all the scout missionaries as the pattern for good communities. Its schools give free meeting rooms for scouts. Its school system trains scout masters.

I once asked Frank if he had a well-defined philosophy of life or of education. He said: "I suppose everybody has, but it's mostly in the subconscious. A schoolman will always see a lot of things that should be done. He picks out what seems to him most important and does 'em. If I were advising a young superintendent, just starting out, I'd say, 'Don't get testy if you don't have your own way. If you have it 51 per cent. of the time you're ahead of the game.' I've had mine in school matters about 80 per cent. of the time. That's more than I've had in my own family. In school affairs I have been lucky. For which I am truly thankful."

Has he a philosophy?—As to educational philosophy I'm sure Frank has made his own the good old dictum uttered by Comenius, Rousseau, Herbert Spencer and John Dewey: "Education is life." In fact, he has said that the superintendent's function is making that maxim work. As charged with the duty of making the program of the next convention of the Department of Superintendence of the National Education Association, Cody proposes this outline:

EDUCATION IN THE SPIRIT OF LIFE

Life is idealistic	Education must aim high.
Life is dynamic	Education must have punch.
Life is practical	Education must be efficient.
Life is recreative	Education must train also for leisure.
Life is friendly	Education must be social.
Life is cooperative	Education must train to work for general welfare.
Life is progressive	Education must move ahead.

In defining what education must be—idealistic, dynamic, practical, recreative, friendly, cooperative and progressive—Cody unconsciously describes himself. He is all of these things. It is curious how restrained we are in compliments for living men except when we make a nominating speech or campaign to get votes for our candidate. Frank has been nominated and elected. He doesn't need any panegyric by me. He has been a member of the Michigan State Board of Education for fifteen years, elected head of it several times. He has been president of the Michigan Education Association and is a working official of various Detroit organizations. If he were dead the memorial speakers would proffer numerous wreaths of praise. Why should I wait for that? So many of us are obligated to him for his example and advice that an intimate description of his points from one who wants nothing from him can not do any harm. Rather, the youngsters in school positions and the older men not above learning by example can profit much by knowing his traits.

Life is idealistic. Cody has always had a vision for education and roads mapped out to reach it. If one got blocked he had others to try.

Life is dynamic. He has always gone at his tasks with the whole of his energy.

Life is practical. The Detroit schools are not chasing fads or nursing any Cody hobbies.

Life is recreative. Cody's temperament is one of the most refreshing you will find among schoolmen anywhere. The Detroit group is always among the heartiest at the conventions. His own humor is evident in the dozen good stories about him. Once when an officious board member said, "I'd like to keep track of school affairs; I wish you'd telephone me each day telling me what you are doing," Cody answered, "I'll do more than that, I'll come to your office every day and kiss you good morning." It was Cody who gave the best reply on teachers' costumes. A Pennsylvania board of education, bothered by the shrink-

ing of women's gowns, wished to pass a rule determining the distance from the ground to the bottom of a woman teacher's dress. They concluded to issue a questionnaire: "What is the proper height of a teacher's skirt?" Frank answered, "I can not tell until I have a look at her."

Life is friendly. It is notable that all the men in the Detroit school system address their superintendent as "Frank." It is creditable that no one shows jealousy of the reputation of the men of the Detroit schools, who are well known through the state and in national repute.

Life is cooperative. The weekly meeting in Detroit, composed of mayor, chief of police, heads of various city departments and the superintendent of schools, has the marks of a feature so appropriate as to surprise you that it is not in vogue everywhere. The proportion of school men and women in Detroit who are members of chambers of commerce and other community bodies is notably large. Winship, who goes everywhere and inquires into everything, considers Detroit far ahead in this.

Life is progressive. When Duluth, in another state, uses Detroit standards as a model; when London sends a superintendent to the City of the Straits to study school building; when Chicago imitates Detroit's method of proposing salary schedules; when the scouting organization urges the Detroit plan upon other cities; when its school system figures in almost every citation of what should be done in health teaching, safety provisions, care of the handicapped and in many other particulars of educational service, it is not a stretch of facts to says its superintendent moves ahead.

Insomuch as you would never hear these things from Cody, but as they are important to record and will do you good to know, I submit this meed of praise for my fellow townsman, child of my own alma mater and beloved by my own neighbors. A piece of good-natured doggerel sung at a schoolmen's dinner will do for the epilogue:

Cody, Cody
Will not toady
To whatever rank.
Honor claimed him
When they named him
Back in Belleville, "Frank."

BOOKS BEARING ON OUR BUSINESS

IF the ladies and gentlemen will be kind enough to be seated we shall comment on the good things appearing in the books devoted to education. Let no one think this is an attempt to copy the style of the immortal autocrat of the breakfast table. Here is, rather, an amateur legatee endeavoring to care for an orphanage whose board of trustees has dissolved. Books used to be reviewed here by a club of teachers styling themselves *Hoi Bibliologoi*. Their leader has gone to the Azores. Sponsorless volumes have fallen to the charge of your humble servant who has for guidance only the bibliological tradition. What was that? It was the mission of tasting and telling what is timely in the remarkable output of professional books coming from the press. There was no pride of erudition in it; the reviewers were confessed amateurs. They made no effort to find defects. Rather, they followed the more cheery road laid out by Elizabeth Nitchie's "Criticism and the Critic," a route leading to a sympathetic appreciation of an author's intent, spirit and work. The gentlemen and ladies who address us at educational meetings generally intimate that we are not so well read in the literature of our profession as are those magnified beings, the doctors, the lawyers and the engineers. The new generation of teachers surely are refuting this reproach, else who is making profitable the outpouring of books for school practitioners? My comments are intentionally propagandist, optimistic and laudatory. If the Great Cyrus was accustomed to

send his friends food and drink with the courteous message, "I have tasted this and found it good," why should I keep to myself the enjoyment I have had with these nutritious volumes? There, all my leaves are cut.

Time to get up: Prosser and Allen.[1] There is nothing timid in the blast blown by these two Joshuas in front of the walls of our educational Jericho. Messrs. Prosser and Allen present evidence of having made unusual preparation before sounding a note. Why is education a public concern? Don't take theories as an answer, nor any psychological rationalizing on the nature of mind and its culture. Don't be led into the realm of perfectionism, the development of the whole man, body, mind and spirit. Don't soothe yourself to satisfaction with acquainting the child with the intellectual inheritance of the race, nor with fitting the individual to his environment. These and many other schoolman-propositions are all of value as helps, but the American obligation on the American schoolmaster can not be satisfied by any other performance of the schools than that which evolves from the American principles of government set up not by scholars but by civic revolutionaries. Plato, Montaigne, Luther, Comenius, Sturm, Pestalozzi, Froebel, Herbert Spencer—all the foreign contributions to a science of education are not legitimate guides for our practice. The great civic overturn of 1776 set up a distinct set of political principles. The men responsible for the new order proposed a scheme of education at public expense to expand and to keep at work forces that make a republic achieve its destiny. With abundant citations from the leaders of the great Revolution, Messrs. Prosser and Allen revive the original scheme of universal education embodying equal service, general welfare, justice, life, liberty and happiness. In similar plenty they quote Americans of mark and character and cite well-authenticated facts bearing on the appalling failure of American public education to realize the work for which it was made a public charge. What those who furnish the money and who sooner or later will organize and take charge of the public schools are saying against them louder and louder, what the progressives in the ranks who are restrained by fear or by laziness or by the power of organized tradition are thinking, is expressed here as plainly as an honest doctor tells the truth to the friends of the patient. You teach as though the Revolutionists created a perfect democracy that would run of itself. God will take care of it, somehow. There is no need to worry. Meantime more and more citizens are becoming dissatisfied with democracy and with the educational system made a charge on them for the purpose of protecting that democracy. The citizen asks us to show in what respects the school people are doing that for which they are paid, whether they are meeting the demands of to-day, whether our youth know citizenship, whether they can do anything worth while. Within the system there are many honest men and women who realize the fakirism of much of the educational performance. They are like the Greeks in the wooden horse. Alone, they can not do much. They need to unite with those outside the walls, for concerted, intelligent and carefully planned action. The outside citizens are the ultimate deciders; they hold the purse-strings; they own the schools. Educators are their employees. The schoolman has much that is invaluable in the remaking of the system, but until he realizes what the founders of it meant and what a pitiable travesty of their intent the present school system is he will cut as small a figure in the educational revolution as he did in the political one of '76.

What are the demands of democracy which the schools evade? Ordinary decencies of conduct, for example, must be practiced: the rights of others must be respected; the taxes must be paid. But democracy demands much more. Every man is expected to be efficient up to a good standard in all the affairs of citizenship. Faced with perplexing problems in a constantly changing situation, the citizen has to think about these problems and to settle them right. What adequate provision for this is the American public school generally making? Occasionally the people, through their legislature, require more attention to this duty by the schools. An Illinois state law requires that not less than forty-five minutes a week from the

[1] C. A. Prosser and C. R. Allen, "Have We Kept the Faith?" The Century Company, New York. 429 pp. $2.75.

fifth grade up to the highest, in every school receiving state money, shall be devoted to the principles of representative government, the essentials of the Declaration, of the federal and state constitutions and to citizenship. What does the average service of Illinois schools in this regard amount to? You could put it in your eye. Thirty selected teachers of Chicago public schools spent thirty weeks revising a course of study on this basis. Where is it? Ask me ye winged winds that round my pathway roar. The schools of 1760 met the needs of one class of people: those who intended their sons to be gentlemen—and sometimes scholars. The schools of 1929 are shot through and through with the same desire. The elementary grades are not so tainted by it, but the high schools and state universities are jaundiced with this disease. We have wasted money in luxurious buildings and equipment to furnish aristocratic club-houses called high schools for cultural education at the loss of citizenship training. The schoolman has exercised an unwarranted and socially unfair direction of the kind of education he thinks the community should pay for. His recommendation has decided which groups of people should be served and which neglected. Should Jefferson, the first really Great Commoner, be able to compare our public education system with the generous pattern he prepared for it he would conclude that his enemy, the aristocratic Hamilton, had broken the model and substituted a foreign counterfeit. Educational speakers on our Atlantic seaboard are fond of repeating the phrase "An Aristocracy of Brains" as an aim for high school and college. English educational snobs in writing of their visits to America insist that the private, select, secondary school is getting more firmly established in the United States.

What explains the persisting fallacies among us that public education is for the gifted few? We see splendidly equipped engineering schools prepared to turn out ten times as many engineers as can find positions, while the institutions for the thousand times as many wage-earners are housed in old rattletraps not good enough to teach literature and language in. We see night schools for adults in the top stories of elementary schools with seats too small and lights too dim for any grown-up man or woman to work by, while handsome palaces of one or two floors sprawl through parked grounds for the delight of youth of sixteen. Some states forbid by law any one over twenty-one years old to be taught in the daytime at public expense. In other countries the appetite of adults for education is keen. The state gratifies it. With us the private correspondence schools thrive on the money paid by adults who can not get what they want from the regular school system. Our public-school service helps 300,000 adults from a total of more than 50,000,000. The social intelligence needed at the present moment in our political circumstances is that of men and women acquainted with national questions. The stock of youthful folk-dancers, dramatic artists and kickers of the football is adequate for all present needs. We have overproduction of what is of little use. Our main wants are overlooked.

Democracy demands of its citizens the ability to reason about the conditions in which we are and about those in which we ought to be. Current history is more important than ancient events; English, than Latin; hygiene, than algebra; sociology, than literature. The school is obligated to teach the most usable subjects. These are learned better and faster than unapplied mathematics and most of the studies in the high-school curriculum. Why are they not taught? Because tradition made the ornamental education of the gentleman and scholar the mark of the high-born and superior. The American schoolmaster persuaded sons and parents that these things are marks of distinction. The colleges so proclaimed them. The high-school faculties convinced themselves that their subjects possess this charm. Ambitious parents who know nothing about the matter wish their children to get the supposed passwords to high society. The hocus-pocus catches a new generation of gullibles every year and only a small proportion ever see the matter put to a scientific test or appraisal.

But science is penetrating the rosy mist with which the culture theorists have surrounded the high school. It is throwing the burden of proof on the secondary teacher to show how

ancient and unrelated knowledge can develop citizens in the duties of to-day. To the bar of public opinion every high-school teacher must expect to be summoned to answer the questions involved in being paid money raised by taxation of all the people. Who pays your wages? What is it paid for? Why should Jones, who has no children, pay as much as Smith with six? How many people over fourteen are in your town? How many are taught in the high-school building? What per cent. is that? Why don't you do something for the others?

John Sansom, in our town, says if the high-school faculties were put through this questioning, one teacher at a time, in the presence of all the adult citizens acting as a jury, the high school would have to shut down from lack of funds. The high school, now, continues through the interest of the few but intelligent parents in a community whose endorsement is parental, affectionate and ambitious rather than patriotic or public-spirited. They may be counted on to organize and get votes if the high school is in danger, but their means of getting support is not by showing that the community is getting the value that the high school costs. Rather, they play on community pride—other towns have fine high schools; on business prosperity—people will move away and leave a dead town; and on the marvelous faith of Americans in the vague and mystical benefit of "education."

In time these elements of strength will be played out. Jones will balk more and more at the cost of educating Smith's children for no perceptible benefit to Jones. Our present school systems are still permeated with the notion that teaching is for the benefit of the child. This puts the childless taxpayer—and those who have no children in school pay most of the cost—in the position of an involuntary good fellow to his neighbors' children. In hard times this feeling isn't strong enough to maintain the tax rate high enough to provide adequate education. We must get the schools out of the practice of training the individual as such. If any one is curious enough to desire it the name of no less a dignitary than the superintendent of one of the ten largest school systems in America can be divulged who argues that if this individuality be promoted in school children good citizenship and economic ability automatically follow. Training of an individual is unescapable, of course, for the school clientele is made up of individuals, but the reason why the American people took over education and now pay for it never was for individual benefit but for community, state and general political welfare. Thus was it promised by every party advocating and passing public-school laws. So must it be realized if American education is to progress or even to hold its own.

This is the line on which the two surveyors, Prosser and Allen, run their line. If, in this attempt to compress into shorter space an argument already compacted with concentrated strength, I fail to use their own terse language, that is your misfortune which you may speedily correct by a personal perusal of the book itself. You will enjoy the graphic arrangement of the analyses of the true and false theories, the real United States school and the pseudo-American one, the standpatter and the progressive schoolman. You can stand yourself up in front of one of these charts, as if you were a block of penmanship in front of an Ayers scale, and estimate your worth on the basis of 100 per cent. Americanism. You may take a rapid run through some of the most scathing criticisms of your schools written by different Americans during recent years. You may get fair and comprehensive recognitions of the schoolman's dilemmas, the difficulty with the teaching staff, the school board, the college hierarchy and the text-book publishers. You will review the attacks made upon the American public-school system at various times, the gallant defense of it put up by the honored fuddyduddies of the service who shot their shots and retired to an affectionate oblivion, while the system tardily reformed itself to satisfy the new demands. You will read much that warms you and some that makes you hot. You will absorb opinions from John Dewey, Edward Thorndike, Herbert Hoover, William Kilpatrick, Leonard Ayres, W. W. Charters, William Lewis, William Hawley Smith and the New Testament. You will read a forecast of what the schools will have to come to, which, let me say, is not only an urgent need but a plan workable by any super-

intendent who has nerve and a hold on the school-board president. You will thank me for inducing you to read this most up-to-date diagnosis and remedy yet published.

Aristotle, at home with us; Jesus, a stranger: Ward.[5] For me to carry out the exhortation of a Dewey, a Thorndike, a Finney, a Judd, a Withers, a Buchholz, and acquaint my pupils with the civic and moral ills of the present which it is the duty of education to cure, I need more than my own shreds of ideas to what is wrong with my country. Those who have gone deeply into the study of civic conditions must furnish us public-school workers with principles and facts.

Harry Ward, as specialist in ethics and economics, gives me one of the most recent surveys of our social state and trend. The American school and college have been subjected to powerful and skilled propaganda to deprecate public service and to magnify private enterprise in the interest of electric utility companies. The public school is besought to inculcate the ethics of Christianity. But the greatest obstacle to the spread of the moral teachings of Jesus is our present economical doctrine. Capitalistic industrialism is opposed to the striving of man to realize the fundamental desires of his soul. It is the antithesis of the Christian idea of the equality of all men. Defenders of prosperity as a main end of living do attempt to persuade us that equality of opportunity is an American fact. The older slogan, "Every boy has a chance to be president," has given way to "Every boy has the chance to be a millionaire." But our unlimited resources have contracted. Opportunity for the common man diminishes. The positions of advantage are absorbed by corporations and inherited wealth. Our great democrats of the Revolution argued for approximate equality of ownership as the basis of a free citizenry. To this end they fashioned our land policy and our scheme of education at public expense. With the inequality of property has come the nullification of political liberty. It is impossible under the money-spending political machines. Cultural opportunity is increasingly apportioned according to income, as the cost of higher education mounts. We can not now supply decent homes for millions of children. The wide-spread sense of life unfulfilled drives men to find spiritual release in war. The human spirit is becoming anemic. Millions of planless, unfilled, purposeless lives shuffled into place and out of place by the competition of the business world see even those who succeed in this anarchic struggle finding little sense of satisfaction and fulfilment. Never in the story of mankind has any nation made as much money with as little consideration for moral values and social consequences as the United States in the last decade. In our competitive rush, consideration for others, which is the basis of morality, becomes an increasingly impossible luxury. The conviction that moral sentiment can not be mixed with business if business is to be successful comes to its full strength in the current saying that the Golden Rule can not work in the business world. The ethics of capitalistic industrialism aims at economic efficiency through the exaltation of self-interest. The ethics of Jesus seeks human development through the limitation of self-interest by mutual adjustment and mutual aid. In our society, fashioned around intelligent self-interest, Aristotle would be perfectly at home. Jesus would have difficulty in finding where to lay his head. From the beginning there has been the same conflict between him and a civilization based upon the possession of economic power by a few that has obtained between him and an order of life based upon military might.

The religion of Jesus demands that our economic activities be brought into harmony with ethical principles. The Golden Rule is not the obstructor but the savior of progress. What we know about the determining effects of the economic process on society is sufficient to demonstrate that progress for man is not possible unless the economic life be intelligently controlled to other ends than the acquisition of property and the power that it brings. It is not merely for its own life that religion is fighting when it refuses to accept the ultimatum that the ethics of Jesus will not work.

[5] Harry F. Ward, "Our Economic Morality." The Macmillan Company, New York. 329 pp.

To choose to live not for self but for all, in justice and fellowship, with the consciousness that these are the eternal values, to achieve solidarity by self-surrender in activity for the general welfare, this is the realization of life according to the teachings of Christ and in line with the fundamentals of a democracy as expressed in its laws.

This is an all too sketchy view of Professor Ward's comprehensive book. The vital details which give these conclusions force, the detailed diagnosis of our serious social disease, the scientific analysis of grave questions from which a current flippancy has diverted so large a proportion of our citizenry, deserve the slow and thoughtful reading which you can do only when fewer scattered things are brought to your attention than is the case in this brief session. I would recommend that you take the book to your private room.

Arithmetic, bewilderment, dislike and the devil. The cheery superintendent of the Cleveland public schools, who signs himself R. G. Jones, has been printing some human and humane procedures in arithmetic. It covers matter which the ladies and gentlemen who work with him have experimented upon and put into practice. Brother Jones's particularly interesting aim is to cure a defect which students of American education have been noting much of late. I mean the curious fact remarked, even so long ago as thirty years, when Dexter and Garlick asserted that arithmetic is a great favorite with young children when they first experience it but by the time they leave school no subject has more who dislike it. The Cleveland scheme starts with an exhortation to teachers to make arithmetic desirable and desired. When we recall how common it used to be to promulgate courses of study without bothering about aims, when we remember the ridicule Harvard's eminent psychologist, Münsterberg, used to pour on those who spoke of objectives, it is gratifying to find a company of teachers setting down first what human effect they wish to produce and how they intend to use arithmetic to accomplish their ends. Our purpose, runs their announcement, is to have pupils do worth-while things well. We wish to lead the children into higher mental activities, to get the boys and girls to want to do the harder things and to develop power to accomplish them. These general objectives, says Mr. Jones, may apply about equally well to any and all grades of education. Especially are they to be emphasized in elementary training, for habits are best formed in the early years. We must therefore choose, he says, much that is interesting to children. We must build as much as we can on what purposes children have. Exercises so based must contribute to social habits and good traits of character. The Cleveland committee, therefore, prepared arithmetic lessons like this: Arrange the class in groups of five or six pupils. Appoint a leader. Have the members of each group jump their best. Measure each accomplishment. Learn how to use fractions of feet, to use inches, yards and fractions. How far did Mary jump? Show it in feet and fractions. Show it in inches. What is the average jumping score of your group? Of the class? If the average is 100 per cent. what is your per cent.?

By cooperation with the physical training instructors the arithmetic classes used scores, per cents. and graphs to aid each boy and girl in improving his athletic score. The Cleveland scheme puts the mathematics to use by children in the large number of various games available for the youngster of to-day. How much cardboard do you need? How much wood? What will it cost? The children make the games. They construct toys for the orphanages. They estimate costs. What impresses me about this scheme and about others like it going into various schools is the intelligent intent to make arithmetic real. These new-course-of-study makers are aiming at interest. "Inter" and "est" mean "among" and "is." The calculation done by Jones's youngsters *is among* the affairs of children.

It is so rational, so different from the arithmetic my dear departed teachers gave me, that it impresses me with all the brilliance of a new discovery.

Computation and curses. My arithmetic was a mystery and a bewilderment. The makers of the books were like the gods of the Romans in

the time of Horace—far-off majesties whose ways were beyond our understanding. They performed cancellation. Behold a galaxy of figures piled upon one another through which the crackling lightning of the slate pencil crashed and utterly destroyed them. I performed misty operations upon strange groups called minuends, multiplicands and dividends. I wrote "ans." after the last unreality which I affixed to each conglomeration. My pretty golden-haired queen who ruled the corner classroom smiled regretfully and said, "Never mind, try another." But the vinegary harridan who next nagged us kept me in late in the day "doing it over" until such thoughts as the Sunday school taught us were the depth of wickedness smeared my soul with sin. In my inexperienced, amateur way I cursed that woman. I cursed arithmetic. Anna Copek, a queer kind of girl whose father did wood-carving in Watson's furniture factory and went fishing all day Sundays, said the devil invented arithmetic and wouldn't let my answers come out right.

Here, after fifty-six years, the swarthy, black-eyed Anna comes back to me on account of a visit to a monastery yesterday. The guide showed us the cell of Fra Anselmo. The walls were covered with charcoal marks showing additions, subtractions, all the fundamental operations, in which were mixed an assorted collection of devils with barbed tails, devils with pitchforks, devils breathing black smoke. Poor Anselmo! The bursarius died and the father superior assigned Anselmo to keep the accounts. They overwhelmed him. He locked himself in. He took neither food nor drink nor sleep. At last in desperation he blasphemed. Then Satanas Diavolo appeared and declared himself the prince of darkness and of numbers. His name is legion. "Serve me and I'll do your sums." In the morning they found Anselmo lying stark and blackened. The monastery accounts on his tablets were balanced without flaw. The charcoal calculations were devilishly illustrated on the walls. But the devout father superior would not take the wicked accounts even though they balanced. He set a holier monk to straighten them, but he left the markings in the cell as a lesson. It teaches that if you curse when figuring you'll get the very devil.

Arithmetic and nervous derangement. No doubt you know of cases of mathematical distress not so severe as Anselmo's but serious enough to cause parents real concern. William Burnham notes instances of St. Vitus' dance and other nervous disorders aggravated and possibly caused by anxiety over arithmetic. He notes none ascribed to music, geography or reading. Lois Meek and others have studied the effect of failure as retarding the growth of ability. She found children whose intelligence was high and whose interest was active falling below those less able and less interested. She traced the trouble to unrepaired failure. Carson's study of the action of draft-animals given too heavy a load shows that after a small number of efforts without success no amount of urging or whipping will induce the beast to pull. Terhune's stories of discouraged dogs, Watson's account of the teaching of animals to jump, showing how the skilful trainer remedies failure by lowering the bar for a few trials to restore confidence, may mean much to the teacher of arithmetic. It is the subject in which failure is more pronounced than in any other school exercise. A Brooklyn mother came to our school with a story of her child's father having asked the daughter to help him check the correctness of some itemized bills he had received. When they were put before her the girl grew white and suffered a fit of vomiting. We found that in her class this child would break into hysterical weeping when doing her sums and that her teacher, relying upon the usual advice for hysteria, had used such rigorous corrective measures as possibly to have aggravated a nervous derangement.

One Sunday when I went out walking I saw Harry Wood, a young business man, pacing up and down on a little ridge under the trees at the side of the road near Arnold's farm. He was moving his lips and snapping his fingers. He would stop with a jerk, take a pencil and make a few marks on papers he had and then pace up and down again.

"What's the matter Harry?"

"Nothing the matter, why?"

"There is, too, what is it?"

"I won't tell. Well, I can't make my accounts come out right. I sat up till two o'clock. I went over and over them. My wife

helped me. I thought I'd come out here in the woods and see if I couldn't find the trouble. I can't rest. I can't think of anything else. The figures go chasing through my head. They are fourteen hundred and eighty-five dollars [or whatever it was] out of the way."

I, who from the time I met arithmetic, had never been sure whether 54 or 56 is the proper product for 8 times 7, who could add 8 and 7 and get 16 or 15 or 13, whichever popped first into my head, who could carry 93 from the bottom of one column and write it 39 at the top of the next, who could write a 0 so that in a few moments I'd take it for a 6, was about as useless a helper in figures as you ever met, but affection was normal within me so I said: "Let's go over it together. Maybe a fresh view will find the trouble. But don't you try to hurry me. My mathematics can't run on high."

We sat on a grassy bank. He brought out his sheets. In less than half an hour, he, not I, found where, intending to add $1,500, he had added $15.00, by keeping too far to the right. His face broke into a smile as broad as his ears permitted. We walked around the tamarack swamp to the river, we followed the stream over the hogback and through the Stockdale hills, my companion singing aloud and not ashamed of it. We sniffed the mandrake blossoms and sweet fern, and the clover beyond Tuttles Bridge. We bought bread and milk and strawberries at a farmhouse and ate under a giant maple. We covered fourteen delicious miles of path through woods and fields without one sniff of dust or gasoline smell, inspirited, irradiated by the glow of success in arithmetic. Archimedes, in exultation at solving a mathematical problem, didn't wait to dress but ran, bare, through the streets of Syracuse waving a towel and shouting the motto of the state of California. Pythagoras sacrificed a hecatomb when he mastered the triangle. We overpaid Mrs. Crane for her strawberries because we had moved a figure two points to the left and turned error into righteousness.

Arithmetic, success, satisfaction, happiness. Often have I seen the dear faces of children burst into beautiful smiles when they find themselves succeeding in making their sums come out right. If looked at in the proper way, arithmetic may be discovered to be the pursuit and capture of happiness and, therefore, one of the purposes of the great adventure known as the United States, which was undertaken 153 years ago with happiness as an important feature of its prospectus.

It does not seem to me straining any point to make a social and civic purpose the controlling reason and motive for teaching arithmetic in an American public school, as I told you at the beginning of this chapter Mr. R. G. Cleveland Jones has done. For arithmetic is a habit-forming exercise. Literature isn't. Geography, as usually taught, isn't. They are informational. But arithmetic, like manual training, doesn't give you contents. Its daily exercises are for forming habits. What habits? Success, rightness, persistence in worth-while things, reliability, usefulness, helpfulness, service. They melt into one another without perceptible boundary lines. But the particular value of each quality can be shown with some distinctness apart from the others. Who looks beyond the text-book and the answer-papers into the infinitely more entertaining and valuable field of cultivated and growing habits can have all the joy that the growers of roses or melons or cabbages or wheat possess in generous measure.

Consider for a moment the cultivation of success—Lois Meek's prime emphasis, Cleveland Jones's "worth-while objective." In arithmetic the quality of success is about as clear and distinct as you can find it anywhere in human affairs. There is no shady doubt to perplex us. Either the result is right or it is wrong. Nobody starting on an arithmetical journey can properly doubt the certainty of arrival. You can ultimately get to the proper place and know it. You need not ask, "Where am I?" The good leader will soon train her young followers into conviction that every addition, subtraction, multiplication and division is practice in succeeding. All the writers of arithmetic now stress the means for getting this assurance. Every computation, they say over and over, must be proved by the computer. *Every*, not here and there one. What calculations should be proved, was asked of sixty-five

Chicagoans whose business is with figures: buyers, sellers, builders, carpenters, bankers, insurance men, engineers, chemists, makers, producers of various kinds. "All," was the unanimous reply. But in schools in Chicago, Brooklyn, Philadelphia, Erie, Boston and Newark, the classes I borrowed and gave simple additions or multiplications to compute performed the operation once, made no check or proof and looked to me or the teacher to decide whether their work was right or wrong. This is taking a pursuit put into school for the express purpose of training accuracy and reliability and using it as a means of cultivating guesswork and gambling by chance.

Prove all things; hold fast to that which is good. Lawrence Hogan was statistician for the city schools of New York, a worker so clever that he beat the operators of computing machines in a speed and accuracy contest.

"How often do you prove?" I asked him.

"Always, of course," he answered. "An adding machine, if it is in proper condition, will correctly add what it gets, but the operator does often hit the wrong key or think 6 where he sees 9. Adding machines have to be checked back every time. So do I. If I let a result go with a once-over I feel like a tune that stops in the middle of a measure. Unless I check each operation I miss the necessary satisfaction of feeling right."

There you have this happiness idea again—Lois Meek and Cleveland Jones and the Declaration of Independence popping in. The beginning of an operation in arithmetic sets loose subconsciously the desire, *libido*, for satisfaction. Beware how you thwart it or the Freudians will find you sozzling with complexes. We Chicago superintendents discussed the whole business at length, and in our various districts instituted the usage of doing arithmetic in school as our sixty-five outside users of arithmetic said was the proper way to perform its processes outside of school: add, prove, stick until you know you are right. We had the usual protest that every school system is able to put up when set upon a new track. We had Pintner, Bagley and Leland Stanford University quoted to the effect that youth is fluid and can not be held to accuracy, that perfection in human affairs is impossible, that teachers and pupils would be made nervous wrecks and that the children could never cover the course of study. Each of the authorities cited promptly and cheerfully denied the allegation imputed and called it nonsense. The reform progressed. From turning in arithmetic work as low as 82 per cent. incorrect, schools tested became able to show every pupil 100 per cent. right in his answers. From a not uncommon fidgeting distress when put at an arithmetic test classes when asked what they had soonest do for the inspector shouted, "Arithmetic." Why? The psychologists will say it was because of the consciousness of undertaking a sure thing, because of the sense of power, the growth of self-confidence, the satisfaction of being right. Our superintendents enjoined the principals to see that arithmetic time was not increased, that no homework in solving problems was given and that the slow children be spared the irritation of being hurried. We cut out speed tests from arithmetic. No matter how quickly you work, if your result is wrong your labor is worthless. Our sixty-five respondents had told us, "Insist on accuracy, and speed will take care of itself." It did. Ernest Horn told us we could profitably drive a class in silent reading but not in computation. We found him right.

We who lack arithmetic sense. A woman told me she had never been able to teach arithmetic before this new regulation was in force. Her hard work and good nature had passed her through the normal school. Her marks in other subjects and the recommendation of the principal had secured her a certificate.

"My children who had mathematical centers in their brains got through without me. The other poor dears I trust were cured of me by the teachers who came after. Now, glory be, when everybody has to get his own work right, and when you have told us how to set the quick ones to teaching the slow to watch their steps, I have learned so much of arithmetic myself that pretty soon I'll be able to teach it."

Lois Meek seems to have established that a method of teaching that insures success step by step is essential for children and easier for teachers. Blessed be the Meek.

I found a considerable number of teachers who, like me, were addled at some period of their school course and by repeated lack of success have let arithmetic get out of their power. They have developed a complex of uncertainty, bewilderment, aloofness, distress and dislike. I made some tests of girls in a high school as to what they had rather do: read a galley of proof, add a page of figures, copy a sheet of music, etc., etc. The number who chose the mathematical task was only 12 per cent.

Any intelligent person can learn to teach arithmetic well. Our New York elementary schools were not sending us girls who had been trained in arithmetic as a joy exercise. I noticed that all the girls who came from the school of Principal Henry Henz preferred numerical work. I visited the school. I sat in the senior teacher's arithmetic class. Here the gray-haired gentlewoman who basked in the radiations from forty pairs of affectionate eyes sent the girls to the blackboard for me. I gave them various numerical operations to perform. Every mother's daughter of them, without being told, checked her work and kept at it until she knew it was correct.

"I was taught so," said my lady. "I think we should not do the children the injury of thinking that work half done is good enough." She also told me that always several of her children were better mathematicians than she. Which reminds me that old Basedow, several hundred years ago, wrote a book to show any one how to teach a subject whether ever studied before by the teacher or not. I knew a remarkable brass band in Michigan that played sweet music with a leader who couldn't read notes. Cheer up, therefore, schoolmaster; if this mystery-foolishness about the remoteness and difficulty of arithmetic is excluded from thought and conversation and you insist on having it regarded as David Eugene Smith looks at it, who spent fifty delightful years in its intimate company and wrote charming books about it; if you listen to John Stone, who says its cheery effect can be enjoyed by the dullest minds; if you recognize what Charles Hubbard Judd demonstrates that it ranks close to speaking, writing and reading as an essential of the happy life and of the social system which is civilization, you, whatever your age, can learn to like it.

Arithmetic as a mind tonic. In spite of Dr. Osler I was over fifty when I undertook to cultivate the arithmetic habit. I blundered along, asking a number of mathematics professors how I could develop my computation center. Some spoke wisely, some joked. None of them was of any use. It occurred to me that these men were too well endowed with the power absent from me to appreciate what ailed my seven-times-eight. A man named Herman Hollman, a bookkeeper, not a teacher, put me on the right track. He said a system of double entry, used at frequent intervals to test addition or whatever is done, is one of the best devices to give one a satisfaction in figures. He showed me how every writing of a check and subtraction of its amount from the balance should be proved by taking the totals of withdrawals for the month or year (according to whether you draw many or few checks) from the total deposits of the period. If the amounts fail to agree it isn't much of a labor to find the error and make it right. If the two results do agree you have a little flash of satisfaction. This proves to be true. I have come almost to the point where I enjoy drawing a check, for I anticipate the sure pleasure immediately following when I shall know exactly how much I have left in the bank and shall know for sure. To do what Cleveland Jones requires, that is, to interweave arithmetic among the real occupations of life, I followed William Harkness's scheme of keeping track of expenditures in detail and comparing, month by month and year by year, the amounts and proportions spent for food, lodging, clothes, gifts, doctors, books and each of the services listed by the budget proposers. In each case the amount spent is subtracted from the balance and added to the total previously spent. If these two totals added do not always produce the same sum, the error can be made right at once. This creates no distaste for arithmetic. On the contrary, it increases enjoyment. If you put off proving until an accumulation of computations is involved the natural laziness of your mind tends to make proving distasteful and thus arithmetic is wickedly prevented from performing its function as a promoter of pure delight. But if you get

the habit of completing each step by a proof, just as you take the trouble to tie each shoelace when you perform the simple operation of putting on your boots, you keep your mind in a state of calm self-satisfaction which is the proper state for a Christian philosopher. I know this, for I have done it ever since I encountered Chicago and felt the need of serenity. Arithmetic is a mind cure. Dr. Samuel Johnson carried a little book of problems in his pocket for a tonic.

I was assisted by a little thing I read in the autobiography of Charles Gounod, the eminent composer of "Faust." He says that the greatest help in his life was given him as a boy by a teacher who found him fretting and rebellious at a school task given him by another master. "Charles, my son," said his friend, "I have noticed that when I make up my mind to do a disagreeable thing the best I can it ceases to be disagreeable."

"Nothing," writes Gounod, "has ever been of more benefit to me than the habit of saying to myself, this is hard, attempt it. Others may do it better; but see how much better you can do it when you quit than when you started."

So here we are: Charles Gounod, Cleveland Jones, Lois Meek and I, along with every intelligent and gladsome teacher who requires her children to chart their successes every day. Give us teachers like Eleanor Nightingale who is ever alert to "catch her children doing right and to rejoice with them." We are finding out that the common saying, "Nothing succeeds like success," is true. If an old man like me who disliked arithmetic for fifty years can enjoy it and get 100 per cent. in it day by day, what can't you do with the plastic minds of youth if you lead them in the paths of pleasantness?

A very respectable old usage. The Lombard merchants invented double entry and prospered greatly so that they covered the land with lovely cities enriched with the excellences of architecture, painting, sculpture and learning. There is nothing mysterious about double entry. It is adding a column down, then up, comparing results and persisting until a balance is sure. It is adding after subtraction. It is multiplying 365 by 29, then 29 by 365, and being sure that the products agree. It is multiplying the two smaller quantities involved in division, adding the remainder and getting the largest number you started with. It is doing this always, not occasionally. It is persistence. It is courtesy to the teacher in saving her work that belongs to the learner, not to her. It is reliability. It is social service. It is righteousness. *Viva il conto doppio!* That's what the inventors called it.

In Alice Keener's class I saw this glad pursuit of success developed to the point where every poor arithmetician had found his particular defect and was with her help repairing it—skipping around in addition; poor-formed, ambiguous 4's and 9's; transpositions, wrong combinations in addition and multiplication—the devils in arithmetic—they aren't so numerous as in spelling but they are more serious. She even had a poster on the wall, a Knight-McClure neatness chart—Scott, Foresman and Company issue it. Each designated youngster put his paper against it until he found his neatness score and charted it on his graph. My gentle Alice praised the gains. They were numerous. She and her children took as much delight in the beauty of these papers as they did in the design projects which were another part of the day's work but not a thing apart.

They like it. When you come to look carefully into this arithmetic business it begins to appear that the teacher who in this cheerful manner is thorough in getting you to stick to each and every computation until you are sure you're right is the one who gets the most satisfaction out of life that can come to any one in this pursuit, namely, the mature gratitude of the grown-ups who have passed through our hands in youth. David Newmark has been canvassing adults to find out what were the traits of those whom they remember as their best teachers. By far the largest number of counts came under the headings: "We worked hard for her and we liked it," "We did well for her," "She made us work and worked with us," "Our work was interesting and enjoyable."

So here endeth the rhapsody of arithmetic by a long-time contemner and disliker of it. And here's to you and the joy in numbers. May you make this study a garden of delight, free of weeds but abounding in whatsoever is meet for the nurture and making of good men.